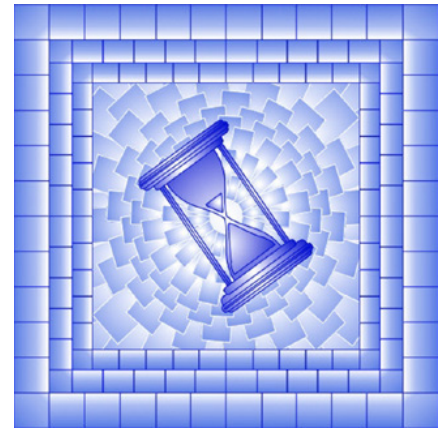


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Surveying and mapping: Prices and an industry overview, 2013 to 2018



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Introduction

The measurement of price changes for surveying and mapping services in Canada is included within Statistics Canada’s Architectural, engineering and related services price index (AESPI). Although coverage of this industry is still fairly new, with the AESPI starting in 2013, it is interesting to look at the surveying and mapping industry as a whole to see what constitutes the industry and what drives its sales and prices.

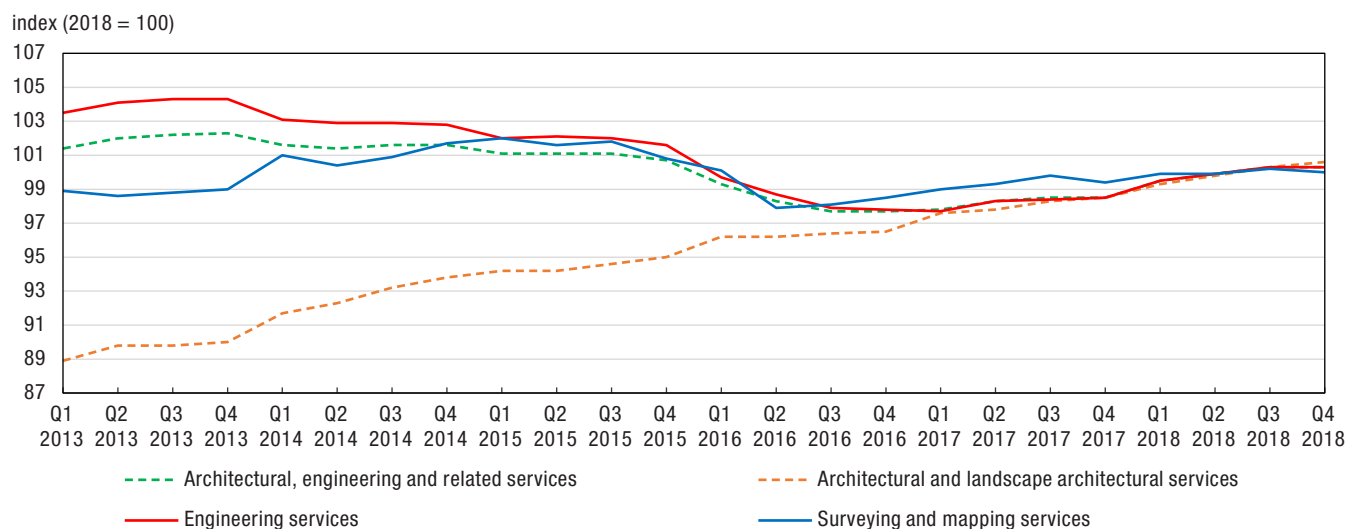
This paper looks at the price movements for surveying and mapping services in Canada between 2013 and 2018, and how these movements compare with those of other similar services under the AESPI. The classification of services within the surveying and mapping sector and the forces that drive the industry within Canada are also discussed, along with an industry update for 2020.

Price Trends

As shown in Chart 1, prices for surveying and mapping services saw an overall increase of 1.1% between the first quarter of 2013 and the fourth quarter of 2018. Prices fell in late 2015 and early 2016 due to a decline in global commodity prices (e.g., oil and gas), and a decrease in demand for non-residential construction between 2014 and 2016. By 2017, prices began to rise again, with the growth of the industry initiated by stabilizing commodity prices and a renewed construction industry.

Trends for prices in the surveying and mapping industry have been similar to trends for related services covered under the AESPI. Both engineering and surveying and mapping services observed a decline in prices in 2016, with subsequent price increases in 2017. This similarity is likely explained by both industries sharing similar projects, such as construction and crude oil related projects.

Chart 1
Architectural, engineering and related services price index

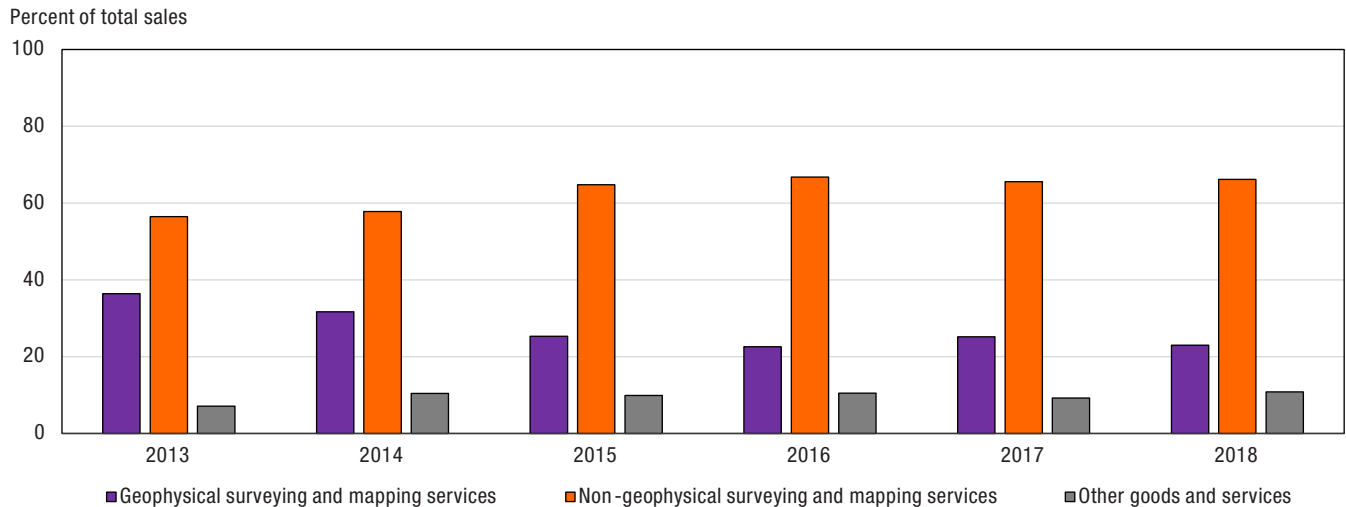


Source: Statistics Canada. 2020. Table 18-10-0164-01 Architectural, engineering and related services price index, quarterly. <https://www150.statcan.gc.ca/t1/tb1/en/tv.action?pid=1810016401>

Industry Breakdown

To understand what drives the surveying and mapping industry, it is important to first note the two classifications of services that make up this industry: geophysical and non-geophysical surveying and mapping services. Geophysical services, as the name suggests, focus on tasks related to the physics of the earth, such as locating and measuring subsurface oils and minerals. Non-geophysical services focus more on mapping and surveying the surfaces of the earth and sea floors, and can include services related to determining property and boundary lines. As shown in Chart 2, there is a large divide between the proportions of sales accounted for by both categories of services.

Chart 2
Surveying and mapping services, sales by type of goods and services



Source: Statistics Canada. 2020. Table 21-10-0211-01 Surveying and mapping services, sales by type of goods and services. <https://www150.statcan.gc.ca/t1/tb1/en/tv.action?pid=2110021101>

Non-geophysical services make up the largest portion of surveying and mapping sales, and its proportion of overall sales has grown between 2013 and 2018. According to IBISWorld, residential and non-residential construction and renovation markets are a large contributor to the non-geophysical services industry in Canada, as boundary line and cadastral services are required for construction projects.¹ Investment in building construction increased by 20.9% (\$7.5B) between the first quarter of 2013 and the fourth quarter of 2018, while the non-residential building construction price index² reported a 12.7% increase during the same period. Both of these factors reflect the upward trend observed in sales for non-geophysical services.

Conversely, geophysical services make up a much smaller portion of sales, and its proportion of overall sales has decreased between 2013 and 2018. According to IBISWorld, the mining and crude oil industries are linked to geophysical services, as demand for new explorations for these products increases when prices for elements rise and crude oil production increases. Both the mining and crude oil industries observed declines between 2013 and 2018, with the total exploration and deposit appraisal expenditures for coal and minerals decreasing by 1.4% (~\$33.3M), and the capital expenditure in oil and gas decreasing by 45.8% (~\$33.9B). It is worth noting that the expenditure values for both industries dipped in 2016 and subsequently showed slight increases. Although not a detailed snapshot of their respective industries, these declines may have contributed to the decrease in sales for geophysical services.

1. Cadastral services: relating to real property boundaries.

2. With the release of the first quarter of 2018, a number of [important changes](#) were introduced to the building construction price indexes. These changes were applied to data for the first quarter of 2017 onwards. For more information please refer to: <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getMainChange&Id=1284969>.

2020 Industry Update

Prices for surveying and mapping services rose an additional 2.6% between the fourth quarter of 2018 and the first quarter of 2020, prior to the COVID-19 pandemic and subsequent economic shutdown. During the pandemic, surveying-related activities were deemed an essential service in the supply chain for supporting all land transactions, according to Natural Resources Canada. However, the surveying industry suffered during the economic shutdown, with many projects being halted. The industry has since been recovering, with many of the halted projects resuming, the number of land transactions increasing and governments having issued various infrastructure projects, requiring surveying services, in order to support the economy.

Did You Know?

- The dioptra was the first surveying tool invented, dating back to the third century B.C. This tool consisted of a hollow tube attached to a stand and was used to measure angles and positions. More than 23 centuries later, we are using tools such as airborne laser scanning (airborne LiDAR), unmanned aerial vehicles (UAVs) and even virtual reality (VR) and augmented reality (AR) to perform surveying and mapping tasks.
- In 2018, researchers from the United Kingdom used GNSS-supported aerial triangulation (GNSS-AT) to create the first UAV-derived velocity fields of an ice sheet interior, without the use of ground control points – an area that was previously difficult to reach.
- In November 2019, Natural Resources Canada updated their High-Resolution Digital Elevation Model (HRDEM) with ~55,000 km² of new LiDAR-derived data. This new update provides HRDEM coverage of various Canadian regions, including the Greater Toronto Area, and is useful for projects such as flood mapping, climate change monitoring, urban management (e.g., smart cities) and forest inventories.

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