

Cancer surgery in Canada, two decades of data

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Over 220,000 new cancer cases are diagnosed annually in Canada, with breast, lung, prostate and colorectal cancers accounting for close to half of these diagnoses. Cancer outcomes are dependent on cancer type, stage at diagnosis and treatment. They may also vary in part because of differences in access to health care and screening programs, treatment options and follow-up care.

Information on cancer treatment is essential to better understand the prognosis and outcomes associated with specific cancer diagnoses since some individuals may not have the same access as others to adequate medical interventions, such as timely cancer surgery. Unequal access to treatment may be influenced by several socioeconomic factors and result in poorer survival outcomes.

A new linkage of the [Canadian Cancer Registry](#) to several other national data sources, including the [2016 Census of Population](#), the [Longitudinal Immigration Database](#), the [Canadian Vital Statistics – Death Database](#), and tax data from the [T1 Family File](#), as well as the Canadian Institute for Health Information's [Discharge Abstract Database](#) and [National Ambulatory Care Reporting System](#), makes it possible to examine cancer surgical treatment more closely. This linkage allowed for the creation of a de-identified analytical file that can be used to compare the proportion of patients in different socioeconomic groups who received surgical treatment after being diagnosed with cancer. While the data predate the COVID-19 pandemic, they provide valuable insight into the socioeconomic characteristics of Canadians diagnosed with cancer that may put them at greater risk of poor outcomes, including during the pandemic.

The proportion of patients receiving surgery increases with income

When cancer patients are split according to the income group they belong to, the proportion who received timely surgical treatment consistently increases with income for all top four cancer sites. The largest difference between the highest and lowest income groups in the proportion of patients who underwent surgery within six months of their cancer diagnosis is observed for lung cancer. Between 2012 and 2015, close to two-thirds (65.8%) of patients in the highest income group received surgical treatment in the six months following their diagnosis, whereas the proportion was half (49.5%) for those in the lowest income group.

Differences in surgical treatment, albeit smaller, were also observed between the highest and lowest income groups for breast (87.8% vs. 81.4%) and colorectal (85.7% vs. 81.2%) cancers. These two cancers are typically associated with an overall higher proportion of surgical interventions than lung cancer.

The proportion of prostate cancer cases requiring surgical treatment was much lower since early-stage prostate cancers usually tend to be the focus of active medical surveillance rather than surgery. Still, the proportion of patients who received surgery in the highest income group was higher than that in the lowest (37.3% vs. 30.9%), as was the case for the other cancer types.

While these proportions reflect differences only between income groups, several other lifestyle, geographic and socioeconomic factors also influence treatment access and warrant further scrutiny. The Canadian Partnership Against Cancer's recent report, [Lung cancer and equity: A focus on income and geography](#), examines the impact of both geographic and socioeconomic factors on treatment access using the linked databases released today.



Table 1
Proportion of patients diagnosed with cancer between 2012 and 2014 who received surgery within six months of diagnosis, by selected cancer type and income quintile

	First quintile	Second quintile	Third quintile	Fourth quintile	Fifth quintile
	%				
Lung	49.5	51.0	56.6	63.5	65.8
Breast	81.4	84.5	86.0	87.2	87.8
Colorectal	81.2	83.2	84.9	85.3	85.7
Prostate	30.9	32.6	35.2	35.3	37.3

Source(s): Canadian Cancer Registry linked to the Discharge Abstract Database, the National Ambulatory Care Reporting System, the Longitudinal Immigration Database, the Canadian Vital Statistics – Death Database, the Census of Population, and the T1 Family File.

Note to readers

This data linkage is the result of a collaboration between the Canadian Partnership Against Cancer and Statistics Canada and is composed of the following datasets:

The [Canadian Cancer Registry](#) is a population-based registry that includes data collected and reported to Statistics Canada by the Provincial/Territorial Cancer Registries.

The [Discharge Abstract Database](#) includes administrative, clinical and demographic information on hospital discharges (including in-hospital deaths, sign-outs and transfers) from all provinces and territories, except Quebec. It is managed by the Canadian Institute for Health Information (CIHI).

The [National Ambulatory Care Reporting System](#) contains data for all hospital-based and community-based ambulatory care visits (e.g., day surgery, outpatient and community-based clinics, and emergency departments). It is also managed by CIHI.

The [Annual Income Estimates for Census Families and Individuals](#) (T1 Family File) are primarily derived from income tax returns, which are provided to Statistics Canada by the Canada Revenue Agency.

The [Canadian Vital Statistics – Death Database](#) is an administrative survey that collects demographic and cause-of-death information annually from all provincial and territorial vital statistics registries on all deaths in Canada.

The [Longitudinal Immigration Database](#) combines administrative files on immigrant admissions and non-permanent resident permits from Immigration, Refugees and Citizenship Canada with tax files from the Canada Revenue Agency.

The [Census of Population](#) provides a detailed statistical portrait of Canada and the demographic, social and economic characteristics of its population. As with the other files involved in this data linkage, all individual identifiers have been removed.

The income groups referred to above are income quintiles (slices of 20% of the population of income tax filers). Therefore, the lowest income group refers to the bottom 20%, whereas the highest income group refers to the top 20%. Adjustments were made to account for patients' age group, region of residence and household size.

Definitions, data sources and methods: survey numbers [3207](#), [3233](#), [3901](#), [4105](#) and [5057](#).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).