ECONOMIC IMPACT OF THE GREATER VICTORIA

20 — Tech Sector — 24

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Executive Summary

Greater Victoria is increasingly receiving global recognition as a technology hub. The region's vibrant, diverse, and thriving technology sector has been a significant driver of innovation and economic and employment growth for British Columbia's economy. This economic impact report illustrates the strength and promise of Greater Victoria's technology sector.

Over the past two decades, revenues in the technology sector in Greater Victoria has shown remarkable growth. Even amid the severe impact of the COVID-19 pandemic on various economic sectors, the technology sector thrived, experiencing substantial growth. **Total revenues (direct impact) for technology firms in Greater Victoria have increased at a healthy pace from $1.0 billion in 2004 to nearly $5.9 billion in 2023.**

The sector is important not only because of its direct impact on the economy but also because of its indirect effects on revenues for other organizations. Indirect economic impacts encompass the economic activity generated by businesses that supply goods and services to technology firms, such as companies providing supplies and equipment to technology firms in Greater Victoria. **The combined direct ($5.9 billion) and indirect ($2.0 billion) economic impact of the technology sector in Greater Victoria was $7.9 billion in 2023—a 51% increase from the $5.2 billion estimated in 2017.**

In 2023, an estimated 20,007 employees were directly employed in the technology sector, up from 16,775 in 2017. Of this total, technology firms employed 17,897 individuals, and 2,110 were self-employed within the sector.

Mirroring global trends accelerated by the COVID-19 pandemic, technology firms in Greater Victoria have notably shifted toward remote and hybrid work arrangements. **Compared to 2019, hybrid work arrangements increased by 31 percentage points in 2023, while office-based work arrangements declined by 41 percentage points, and remote work rose by 10 percentage points.**

In the fast-paced technology industry, where innovation is constant, the demand for specific skills among technology workers is constantly changing. Among technology firms in Greater Victoria, software engineering and development skills were the most in-demand, followed closely by marketing, sales, and product management skills.

Lifestyle, mild climate, shorter commute times, and the presence of post secondary institutions are the top advantages of operating a technology firm in Greater Victoria. These factors contribute to the region's appeal, fostering a conducive environment for business operations and talent development. Affordable housing was ranked as the primary challenge for firms, closely followed by costs of living excluding housing. While homelessness and theft vandalism ranked lower as challenges, their importance has significantly risen since the 2017 study.

Barriers to the success of technology firms in greater Victoria were broad-based, with access to recruitment for technical staff and senior management ranking highest. This was followed by hurdles to accessing finance and other obstacles, including limited government support, recruitment for business operations/administrative staff, a reliable supply chain, and access to new markets.

VIATEC (Victoria Innovation, Advanced Technology, and Entrepreneurship Council) commissioned and funded this independent study recognizing the vital insights tracking the sector provides to its members, policymakers, media outlets and other stakeholders.

About VIATEC

The Victoria Innovation, Advanced Technology and Entrepreneurship Council (VIATEC) is the driving force behind the thriving tech sector in Greater Victoria, British Columbia. Established as a not-for-profit industry association, VIATEC is dedicated to fostering a cohesive and innovative technology community, providing resources and support to tackle shared opportunities and challenges.

VIATEC's mission is to cultivate a vibrant tech ecosystem by connecting people, creating opportunities, and promoting the region's tech industry. Through initiatives such as the VIATEC Foundation, Fort Tectoria, the Venture Acceleration Program, the Startup Visa Program, the LIFT CEO Retreat, the VIATEC Awards, and Discover Tectoria, VIATEC ensures that the community has access to the tools and networks necessary for growth and success.

VIATEC's strategic goal, "10/2030," aims to propel the tech sector to achieve $10 billion in revenues by 2030. This ambitious target is part of our broader vision to ensure that Victoria remains a leading hub for technological innovation and economic development.

Learn more at VIATEC.ca.

Economic Output Impact of Greater Victoria's Tech Sector

The technology sector is a significant driver of innovation and a growing source of economic growth in Victoria, British Columbia. While most people think of the technology sector in terms of information and communications technology, the industry is much broader in scope. For example, the technology sector encompasses companies that develop:

- Aerospace
- Advanced Manufacturing
- Cleantech and Green Technologies
- Digital and Software Products and Services
- Education and Training
- Fintech
- Gaming, AR/VR and Entertainment Technologies
- Life Sciences, Health, Biotech and Pharmaceuticals
- Ocean and Marine Technologies
- Online Marketing
- Telecommunication and Wireless Technologies

For this study, we have relied on the definition of the high technology sector as defined by BC Stats.[1] BC Stats uses the North American Industry Classification System (NAICS) to identify technology-based firms producing technological goods and services.

This study provides a snapshot of how technology firms in Greater Victoria impact the local and provincial economy. Greater Victoria comprises 13 municipalities on the southern tip of Vancouver Island. Three data sources were used to estimate the direct economic impact of the technology sector in Greater Victoria:

1. An online survey sent to technology firms in Greater Victoria;
2. VIATEC census data of technology firms in Greater Victoria; and
3. Data from BC Stats on the high technology sector updated as of September 2023.

The online survey distributed to technology firms in Greater Victoria asked respondents to provide employment and revenue estimates for 2023 as well as other information, such as the advantages and challenges of having their firms located in Greater Victoria. Appendix A provides a detailed overview of the methodology employed in this study.

[1] BC Stats (2023). Defining the B.C. high technology sector
https://www2.gov.bc.ca/assets/gov/data/statistics/business-industry-trade/industry/high_tech_definitions.pdf

The economic impact results discussed below are divided into direct, indirect, and total impacts. In addition, total employment estimates within the technology sector are also discussed.

Direct Economic Output Impact Firms

To compute the precise direct economic impact of firms, we would require revenue data for all technology firms in the sector. Based on VIATEC census data and responses to the online survey, we had revenue data for 151 technology firms in Greater Victoria. Total revenue for these firms amounted to $1.6 billion in 2023.[2] This revenue data was conservatively extrapolated to businesses for which we did not have revenue data.

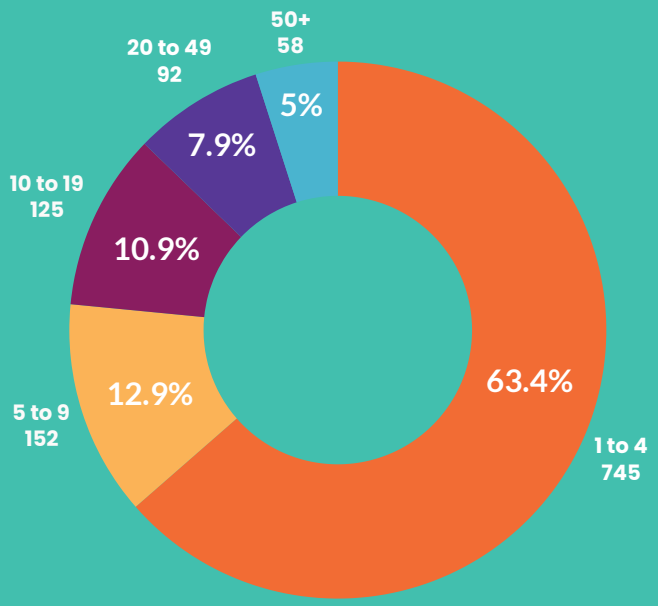


Figure 1: Estimated Firm Count by Firm Size, 2023

The first step in extrapolating firm revenues was to estimate the number of firms in the technology sector in Greater Victoria. According to BC Stats, there were an estimated 1,100 technology firms in Greater Victoria in 2021. Based on VIATEC census data and past growth trends of technology firms, the total number of firms in the region is estimated to be 1,172—an increase of 6.5% from 2021. The majority of these firms, or 64%, have one to four employees (see Figure 1).

The next step was to estimate average revenues by firm size. To do this, we relied on revenue data for 126 of the 151 firms for which we have revenue data. Revenue data from 25 firms were found to be significant outliers and were not included in calculating average firm revenue by firm size. The average revenue per firm size is illustrated in Table 2.

The average revenue per firm size was then used to estimate revenues for firms for which we do not have data (i.e., 1,021 firms).

[2] Revenue figures in this report are not adjusted for inflation

Employee Size Category	Firm Count	Share of Total
1 to 4	745	64%
5 to 9	152	13%
10 to 19	125	11%
20 to 49	92	8%
50+	58	5%
Total	**1172**	**100%**

Table 1: Estimated Firm Count by Firm Size, 2023

[3] Specifically, firm counts were multiplied by the average revenues by employee size category. Based on these calculations, the remaining 1,021 firms were estimated to generate $4.0 billion in revenues. Total revenues for all technology firms in Greater Victoria are estimated to be $5.6 billion in 2023. This represents a 47.9% increase from 2017, when the last study was conducted, or a nearly 8% average annual increase.

Direct Economic Output Impact—Self-Employment Income

Self-employment revenues must also be calculated to compute the direct economic impact. As previously discussed, BC Stats estimated that in 2019, there were 1.8 self-employed individuals for every technology firm in British Columbia. This ratio has likely increased; however, using the 2019 ratio serves as a more conservative estimate of the number of self-employed individuals in the technology sector in Greater Victoria. Given that there were an estimated 1,172 technology firms in Greater Victoria in 2023, this implies that the number of self-employed individuals stood at roughly 2,110.

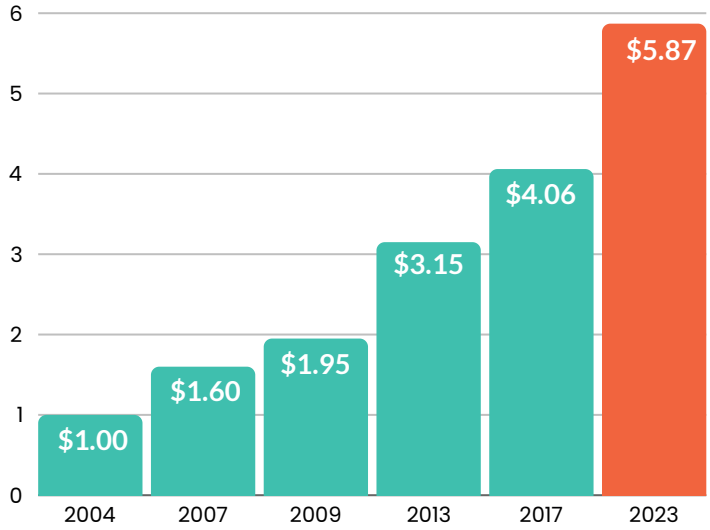
Based on data from BC Stats and survey response data, it is estimated that self-employed technology sector workers earned an average of $110,478 in 2023. This represents a 5.6% average annual growth rate from the estimated self-employment income of $82,810 in 2017. Overall, self-employment income in the sector in 2023 stood at an estimated $233 million.[4]

[3] There were an estimated 1,172 technology firms in Greater Victoria in 2023 and we have revenue data or 151 of them, leaving 1,021 (1,172-151) firms for which we do not have revenue data for.
[4] Total number of self-employed individuals multiplied by their average income (2,110*$110,478).

Total Direct Economic Output Impact

The total direct economic impact is computed by adding together the revenues of firms surveyed, the extrapolated estimate of revenues of firms not surveyed, and total self-employment income. Overall, the direct economic impact of the technology sector in Greater Victoria in 2023 is estimated to be nearly $5.9 billion.[5] This is a 44.3% increase from the direct economic impact of $4.06 billion estimated in 2017 and a nearly sixfold increase from the $1.0 billion estimated in 2004 (see Figure 2).

Figure. 2: Steady Increase in the Direct Economic Out Impact ($, billions)



Indirect Economic Output Impact

The previous section discussed the technology sector's direct impact on Greater Victoria. However, the effect does not end there, as other sectors within the British Columbia economy depend on these firms. Indirect impacts are generated by industries that supply or provide services to technology firms located in Greater Victoria.

Indirect impacts can be estimated using Statistic Canada's economic multipliers and ratios for the Province of British Columbia. BC Stats divides the technology sector into two large categories: manufacturing and services. As such, multipliers corresponding to these sub-sectors were employed, and a weighted average multiplier for the sector was estimated.

The weighted average multiplier for the technology sector in Greater Victoria was estimated to be 0.34. Multiplying this multiplier by the direct economic impact provides an estimate of the indirect effect, which is estimated to be $2.0 billion in 2023.

[5] Total revenues for all technology firms in Greater Victoria plus self employment income.

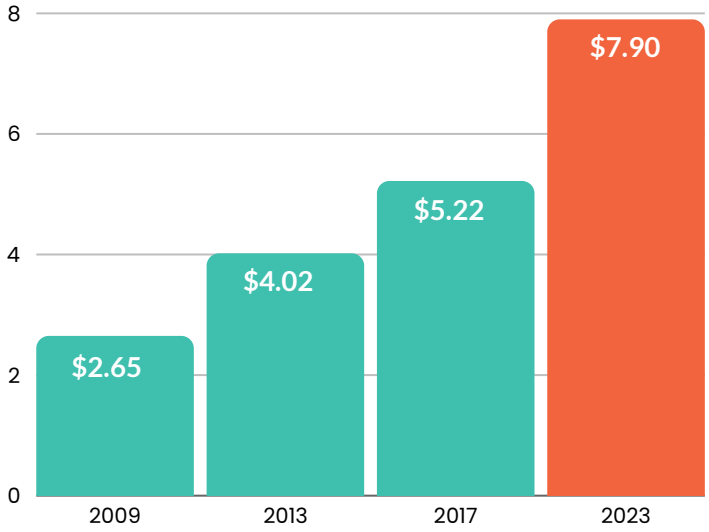
Total Economic Output Impact

Adding together the direct and indirect impacts of the Greater Victoria technology sector, the estimated total economic impact of the sector in 2023 is $7.9 billion—a nearly 51% increase from the $5.2 billion in 2017 (see Figure 6). This represents an annual average increase of 8.5% since 2017. The technology sector in British Columbia, as well as other regions around the world, has boomed since the onset of the COVID-19 pandemic.

The rapid adoption of digital solutions, remote work, and increased demand for advanced technologies have driven this surge. Technology companies in Greater Victoria have capitalized on this trend, leading to substantial economic growth within the sector.

It is important to note that this estimate does not include induced economic impacts. Induced impacts arise from the spending by employees of both the direct and indirect impact sectors. When these employees spend their incomes on goods and services such as housing, food, and entertainment, it generates additional economic activity and jobs. **Therefore, the total economic impact estimate is considered a conservative valuation of the technology sector's contribution to Greater Victoria.**

Figure. 3: Total Economic Output Impact ($, billions)



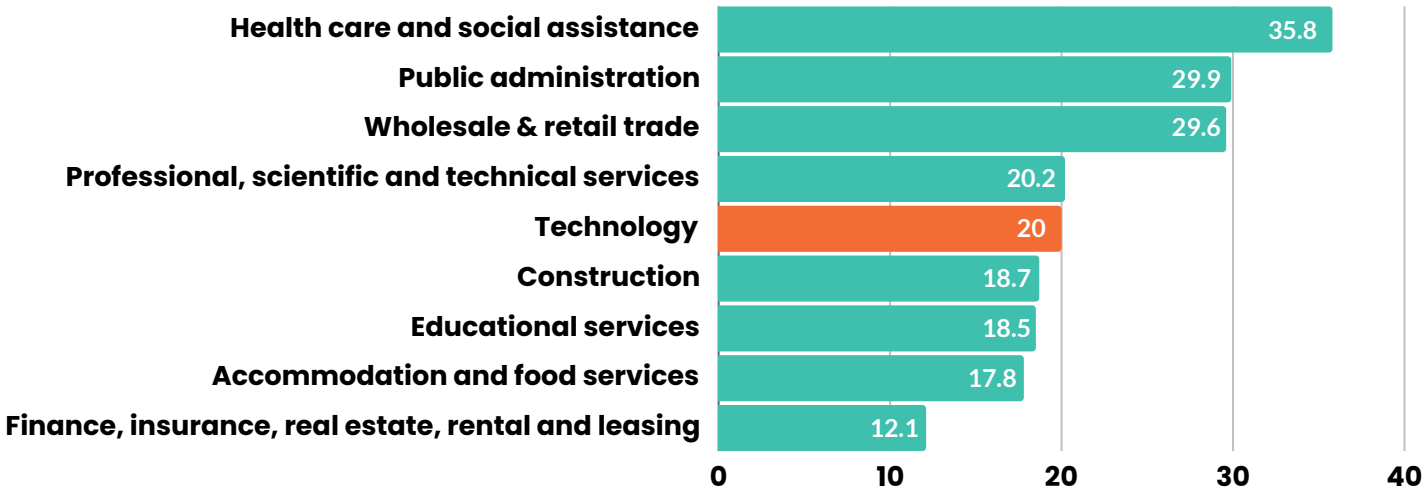
Employment in the Technology Sector in Greater Victoria

The total economic impact illustrates that the technology sector in Greater Victoria has been a boon to the local economy. Beyond the direct and indirect economic impacts, the technology sector is also significant in terms of the number of people employed in the sector.

Using the survey data, as well as data from BC Stats and VIATEC's census of technology firms, we have estimated that the number of people employed by technology firms in 2023 was 17,897. However, this estimate does not include the estimated 2,110 self-employed individuals. Including the self-employed, the overall number of people employed in the technology sector in the region is estimated to be 20,007. This represents a nearly 20% increase from the employment estimate of 16,775 in 2017.

While technology jobs exist in many industries, we can compare total jobs in the technology sector in Greater Victoria with other industries. As Figure 4 illustrates, the technology sector in Greater Victoria employs more people than the construction; education services; accommodation and food services; and finance, insurance, real estate, rental, and leasing industries. It is important to note that this figure is for comparison only, as technology sector jobs would be included in other industries such as the professional, scientific, and technical services industries.

Figure 4: Employment in Greater Victoria by the top 9 industries (thousands)



Employees in the technology sector contribute significantly to government revenues. **In Greater Victoria alone, those directly employed in the technology industry are estimated to contribute over $422.6 million in combined federal and provincial taxes.**[6] This substantial tax contribution underscores the sector's economic importance in the region.

Changes in Work Arrangements

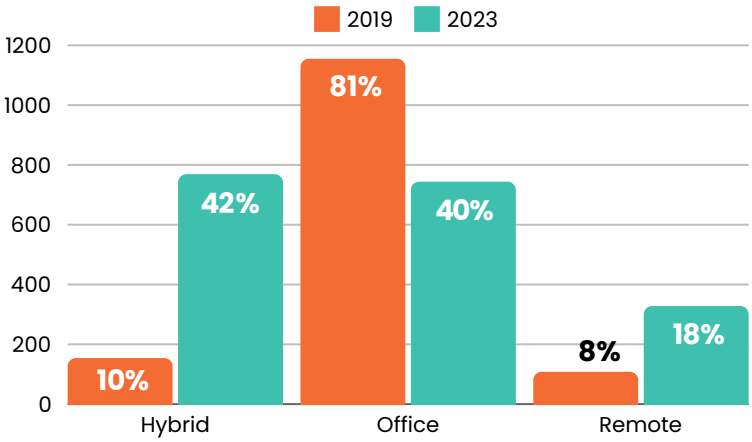
Survey respondents were also asked to indicate the change in work arrangements between 2019 and 2023. Specifically, respondents were asked to provide a breakdown of the number of employees working in hybrid arrangements, from an office, and 100% from home. The purpose was to understand how work arrangements have changed since the COVID-19 pandemic.

[6] Total number of tech employees multiplied by their average income multiplied by medium tech tax rate (20,007*$88,807*0.24)

During the pandemic, the world embarked on the largest work-from-home experiment in history. Protocols imposed by governments and public health authorities in early 2020 mandated that organizations shift all employees who could work from home to do so. While the transition to remote work was sudden for many, the adoption of remote work arrangements by knowledge workers, especially those in the technology sector, had been accelerating for years.

Sixty-two survey respondents answered the optional questions about their employees' work arrangements in 2019 and 2023. The percentage of employees working in hybrid arrangements increased by 31 percentage points, while the number of people working in an office decreased by 41 percentage points. The number of people working remotely increased by 10 percentage points in 2023 compared to 2019 (see Figure 5). Based on these findings, it is clear that work arrangements for technology sector employees in Greater Victoria, as they have elsewhere, have shifted substantially

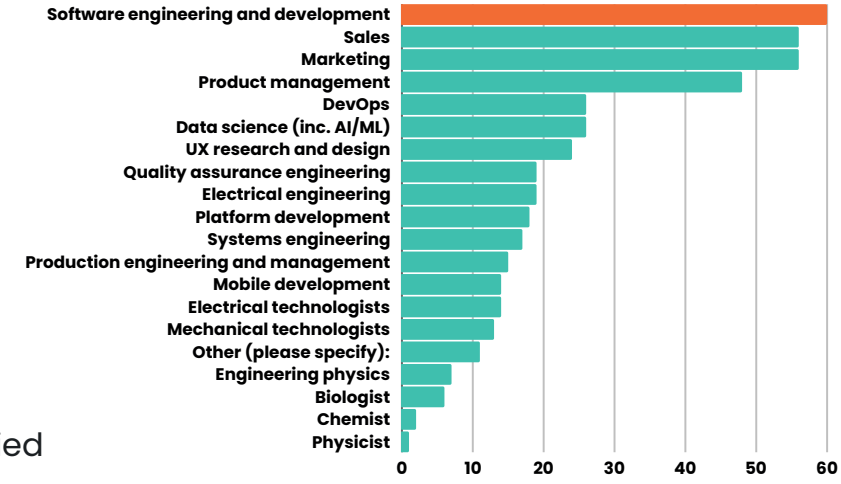
Figure. 5: More employees in hybrid work arrangements and working from home



Skills in High Demand

The technology sector is advancing at a rapid pace, and the required skills of technology employees are constantly shifting. As such, survey respondents were asked to indicate the skills that will be in great demand for their organizations in the next three years. A total of 103 survey respondents responded to this question. The top in-demand skills were software engineering and development, followed by marketing, sales and product management skills (see Figure 6). Respondents who selected "other" identified skills such as leadership, copywriting, and human resource skills.

Figure 6: Skills in high demand



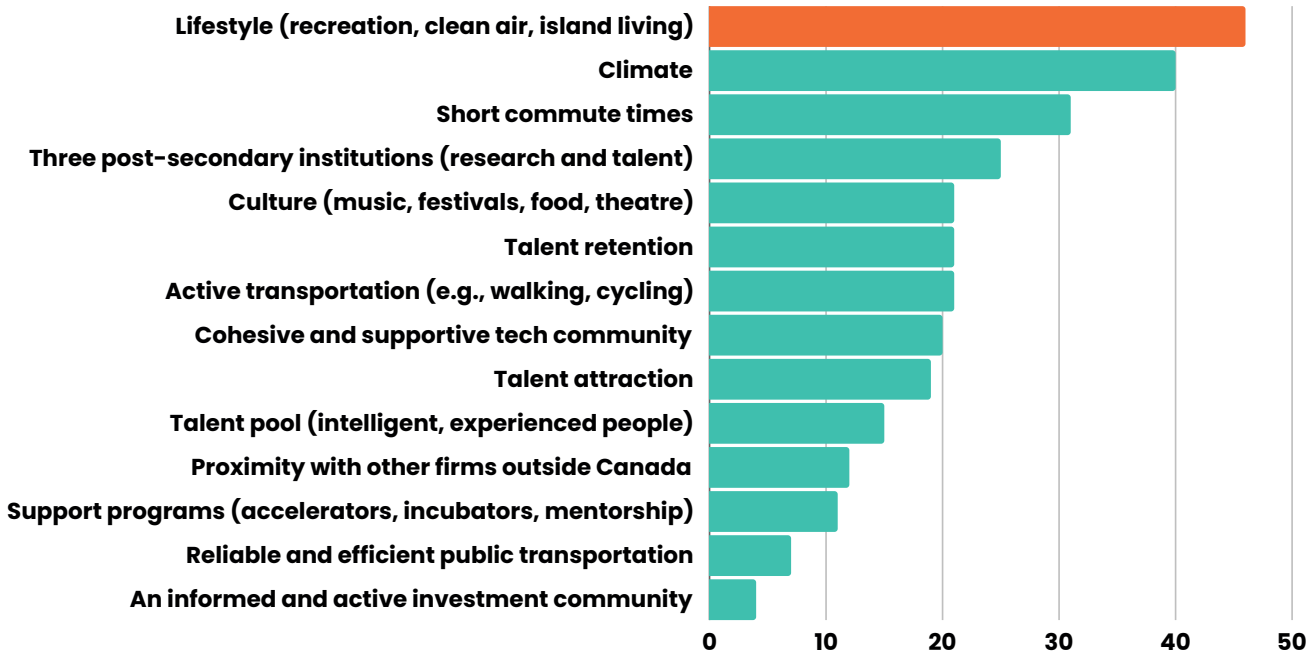
Advantages, Challenges, and Barriers to Success

Survey respondents were also asked several questions about the advantages, challenges, and barriers to their success in operating in Greater Victoria. This section provides an overview of these findings.

Advantages

Sixty-two survey respondents answered these optional questions. Lifestyle was ranked as the greatest advantage for operating a firm within Greater Victoria. The region offers an attractive lifestyle with diverse recreational opportunities, cultural attractions, and a strong sense of community, making it an appealing destination for tech talent and their families. Ranked second among the region's appealing attributes was its mild climate, featuring hot, dry summers and very mild winters, which fosters a more enjoyable outdoor lifestyle. This temperate weather not only contributes to employee well-being but also minimizes weather-related disruptions, further enhancing the region's attractiveness for businesses.

Figure 7: Primary advantages of being located in Greater Victoria



The third-ranked advantage was the fact that citizens in Greater Victoria enjoy shorter commute times compared to other cities, allowing for increased productivity, better work-life balance, and cost savings. The presence of three post-secondary institutions also ranked high, playing a significant role in both talent attraction and retention. (see figure 7)

Challenges

When asked about the greatest challenges of operating a technology firm in Greater Victoria, survey respondents indicated that the cost of affordable housing was the greatest concern, followed closely by the costs of living excluding affordable housing. Although homelessness and theft and vandalism were ranked lower among the challenges, their significance has notably increased compared to the findings of the 2017 study. (Table 3)

	Not a challenge	Minor challenge	Moderate challenge	Serious challenge	Weighted average
Affordable Housing for Staff	**2**	**7**	**15**	**33**	**3.52**
Cost of Living (excluding affordable housing)	2	5	22	31	3.39
Limited Talent Pool	10	13	21	13	2.77
Access to Equity Funding (venture capital, angel investors)	21	5	14	10	2.72
Affordable Office Space	14	23	9	11	2.39
Homelessness	18	16	14	6	2.34
Suitable Office Options	19	18	11	7	2.26
Municipal Red Tape (licensing, permitting, etc.)	26	12	6	7	2.21
Theft and Vandalism	25	14	9	4	2.12
Transportation	24	22	4	1	1.95

Table 3: Challenges for technology firms in Greater Victoria

Barriers to Success

Survey respondents were also asked to indicate the barriers to their success that they expect to face in the next three years. The barriers were broad-based, with access to recruitment for technical staff and senior management ranking as the top two barriers. Suitable financing access and options ranked third, with a lack of government tools and/or funding support, access to recruitment for business operations and/or administrative staff, a reliable supply chain, and limited or lack of access to new markets following closely behind. (see Table 4)

	Not a barrier	Minor barrier	Moderate barrier	Serious barrier	Weighted Average
Access to recruitment for technical staff	**11**	**11**	**24**	**10**	**2.79**
Access to recruitment for senior management	**11**	**13**	**21**	**10**	**2.79**
Suitable financing access and options	18	14	12	6	2.52
Lack of government tools and/or funding support	16	19	14	3	2.42
Access to recruitment for business operations and/or administration staff	18	17	16	5	2.38
Reliable supply chain	25	10	10	5	2.33
Limited or lack of access to new markets	18	19	9	6	2.32
Work models: Determining in-office, hybrid, and remote arrangements	28	16	9	2	1.95

Table 4: Barriers to success that firms expect to face in the next three years

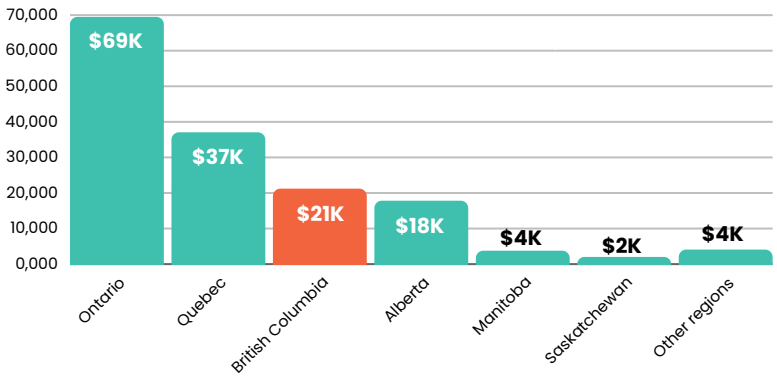
Overview of the Technology Sector in British Columbia

This section of the report provides an overview of the technology sector in British Columbia based on the 2023 edition of the Profile of the British Columbia Technology Sector produced by BC Stats.[7] This most recent data provides estimates for Gross Domestic Product (GDP), revenues, employment, wages, and business counts up until and including 2021. In addition to survey data, which will be discussed below, this data forms the foundation for computing the economic impact of the technology sector in Greater Victoria.

Gross Domestic Product

The technology sector in British Columbia is a key economic driver for the province, and it has been expanding at a healthy pace. Adjusted for inflation, the technology sector contributed nearly $21.2 billion to British Columbia's GDP in 2021. This represents roughly 14% of the total GDP generated by the high-technology sector in Canada and places British Columbia third in terms of the sector's contribution to total GDP, behind Ontario and Quebec. (See figure 8)

Figure 8: Real GDP in BC's technology sector ranks third ($ millions)



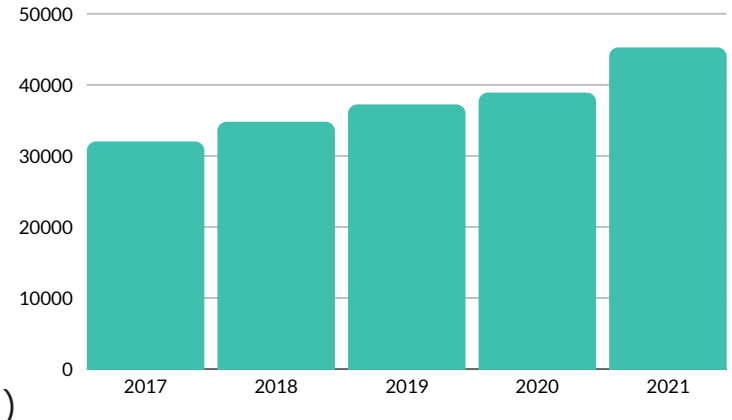
[7] BC Stats (2023). High technology.
https://www2.gov.bc.ca/gov/content/data/statistics/business-industry-trade/industry/high-technology

Revenues

Total revenues for the technology sector in British Columbia stood at $45.3 billion in 2021—a 16.4% increase from 2020 and the highest level on record (see Figure 2). In the past five years, the sector has registered an 8.4% average annual revenue growth rate.

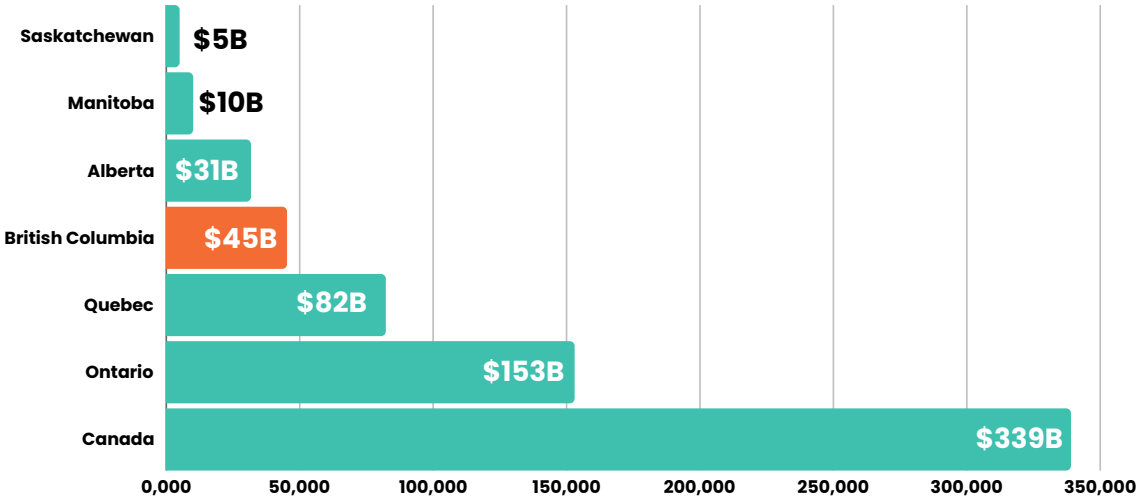
Total revenues for the technology sector in British Columbia stood at $45.3 billion in 2021—a 16.4% increase from 2020 and the highest level on record (see Figure 9). In the past five years, the sector has registered an 8.4% average annual revenue growth rate.

Figure 9: Persistent revenue growth in British Columbia's Technology Sector



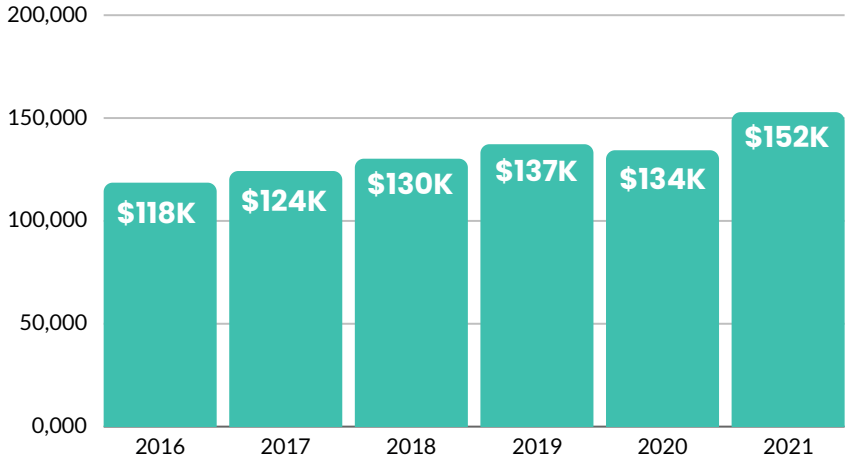
In terms of total revenue, British Columbia's technology sector is the third largest in Canada in 2021, behind Ontario ($153.0 billion) and Quebec ($82.2 billion) (see Figure 10). Over the past decade, average annual revenue growth in British Columbia's technology sector (8.5%) has significantly outpaced the national average (4.9%).

Figure 10: British Columbia has the Third Largest Technology Sector in Canada in Terms of Revenue, 2021



Employment

Figure 11: Employment in British Columbia's Technology Sector Highest on Record



Despite a slight 2.1% decline in 2020 from 2019 due to the COVID-19 pandemic, the technology sector in British Columbia has continued to post robust employment gains. In 2021, firms in the technology sector employed 152,870 people—a 13.8% increase from 2020 (see Figure 16). The number of people employed by technology firms in British Columbia has been growing at the fastest pace nationwide. Between 2017 and 2021, the number of people employed by technology firms in British Columbia increased at an average annual rate of 5.3%, higher than the 3.5% annual average posted for all technology firms in Canada.

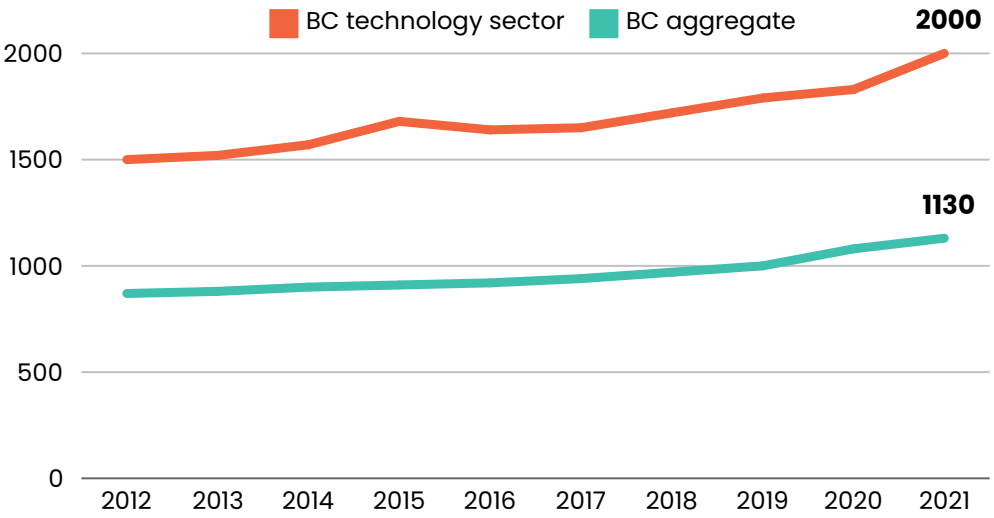
The number of people employed by technology firms in British Columbia represented nearly 7% of all people employed by firms across all industries in the province in 2021. Compared to other industries in British Columbia, firms in the technology sector employ more people than the mining, oil and gas, and forestry sectors combined. Growth in the number of people employed by technology firms in British Columbia between 2017 and 2021 (5.3%) has outpaced the growth recorded in each major sector in British Columbia, except for the utilities sector, which advanced at an average annual pace of 6.5%.

There are also a large number of self-employed individuals working in British Columbia's technology sector. BC Stats estimated that in 2019, there were 1.8 self-employed individuals for every firm with employees. Given that there were 11,661 technology firms in British Columbia in 2021, the number of self-employed individuals in the sector is about 21,000, bringing the total number of people working in the sector to roughly 173,870.

Wages

The rapid rate at which the technology sector in British Columbia is expanding has generated substantial demand for tech-sector talent, a boon reflected in average weekly earnings.

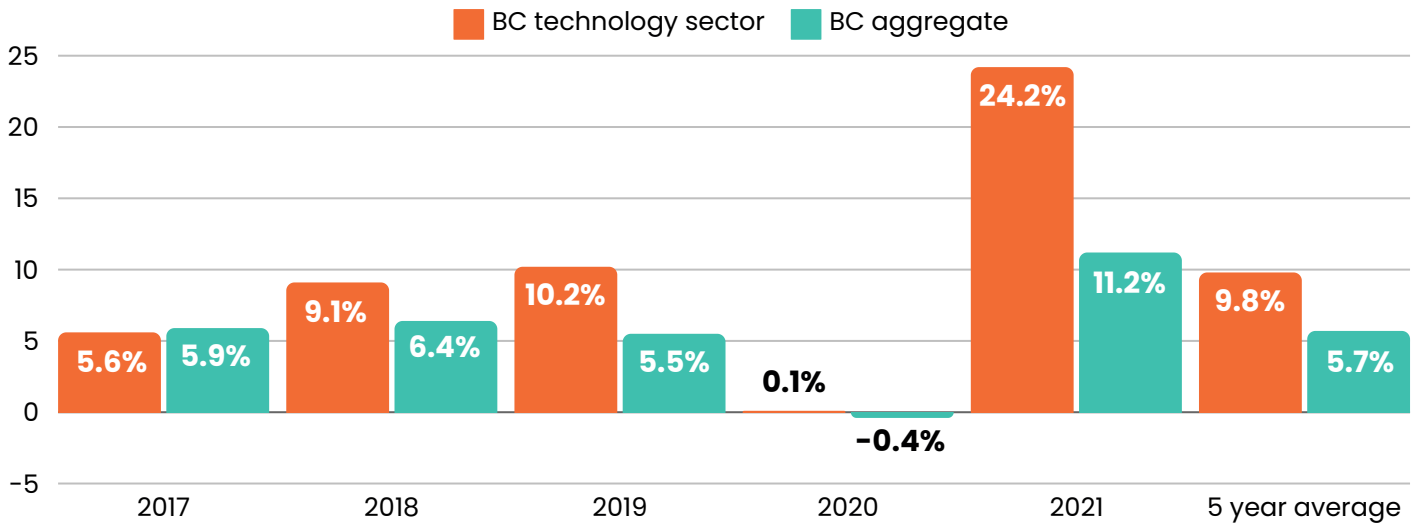
Figure 12: Average Weekly Earnings in British Columbia's Technology Sector Higher than Provincial Aggregate ($)



In 2021, the average worker employed by a technology firm in British Columbia earned roughly $2,000 per week, compared to just $1,130 for the average employee in British Columbia. The gap between average weekly wages and salaries in the technology sector and all industries in British Columbia has been growing over time. (see figure 17)

In 2021, average weekly wages and salaries by employees working for technology firms in British Columbia rose 24.2% from a year earlier. This growth is substantially higher than the 11.2% average growth rate for all industries in British Columbia from 2020 to 2021. (see Figure 13).

Figure 13: Technology Wage and Salary Growth Remains Above Average Provincial Growth Rate for all Industries (%)



Business Counts

The number of technology firms in British Columbia has increased steadily. In 2021, 394 new technology firms opened their doors, bringing the total number of technology firms with employees to 11,661.[8] Nearly 94% of British Columbia's technology firms operate in the service sector, while high-technology manufacturing firms account for about 6%. Overall, in 2021, there were 11,661 technology firms with employees.

On a regional district level, the Metro Vancouver region of the province had the largest number of technology firms at 7,666 in 2021. Greater Victoria had the second-highest number of firms, with an estimated 1,100. **Overall, the number of technology firms in Greater Victoria with employees has increased by 12.2% since 2017—higher than the 10.2% increase in all technology firms across the province.**

[8] Note that self-employed individuals are not included in this estimate.

Appendix A: Methodology

Economic impacts can be estimated at direct, indirect, and induced levels. The direct impact includes the sum of all direct effects that technology firms have on Greater Victoria due to their operations. Indirect impacts are secondary effects that represent the impact of technology sector activity on industries further back in the supply chain. These effects include changes in sales for firms within the province that supply goods and services to the technology sector. Induced impacts are also secondary effects that occur when employees or owners of directly or indirectly affected industries spend their income within the economy. The total impact is a compilation of the direct impact, indirect impact, and induced impact generated in the economy. For the purpose of this study, only direct and indirect impacts are considered, and the economic contribution of technology firms in Greater Victoria is termed the economic impact. The exclusion of induced impacts ensures a more conservative estimate.

Economic impact analyses use different types of impacts to measure results. The direct impact in this analysis is based on the "income" impact (gross output), which assesses the change in earnings and business profits in the region. The direct impact is thus calculated by estimating the total revenues of all technology firms in Greater Victoria. Revenues are not adjusted for inflation.

Estimating the indirect impact is a more complex exercise. While it may be possible to conduct a survey of downstream employers, such a survey would need to cover thousands of firms in order to completely cover the indirect impacts. As an alternative, the indirect impact can be estimated using economic multipliers from input-output models. An input-output model is a representation of the flows of economic activity within a region. The model captures what each business must purchase from other firms in order to produce a dollar's worth of goods or services.

Estimating the Direct Economic Impact

Three sources of data were used in order to estimate the direct economic impact of the technology sector in Greater Victoria: VIATEC census data of technology firms in Greater Victoria, an online survey sent to technology firms in Greater Victoria, and Data from BC Stats on the high technology sector updated as of September 2023.

VIATEC maintains a database of technology firms in Greater Victoria and regularly updates it as new information becomes available. The database contains contact information, including e-mail addresses, employee counts, the location of the firm's headquarters, the year the firm was founded, and other information about the known technology firms in Greater Victoria. While this database is useful in identifying and contacting local technology firms, revenue data is limited, nor does it include future revenue projections or other qualitative information.

In order to gather the base data for this study, an online survey was developed and sent to known technology firms in Greater Victoria using the contact information provided in VIATEC's database. The survey covered the following topics:

- Company profile information (e.g., contact information, year founded, primary industry sector, location of the firm's headquarters, and the current growth stage of the firm)
- Employment data (e.g., number of full- and part-time employees located in Greater Victoria and outside the region, as well as the number of contractors, interns, and non-paid staff members)
- Revenue and expenditure data (e.g., total revenues for 2022 and 2023, and employee expenditures)
- Qualitative questions about conducting business in Greater Victoria

The survey was sent to 406 technology firms in Greater Victoria. A total of 113 firms provided complete or partial responses, resulting in a response rate of 28%.

For those providing only partial responses, VIATEC's census database was used where appropriate to fill in gaps. In addition to the survey data, revenue data from VIATEC's census database and other publicly available data were used to estimate revenues for an additional 38 firms. In total, revenue data was available for 151 firms.

Estimating the Indirect Economic Impact

To estimate the total indirect economic impact, within-province economic multipliers for the Province of British Columbia based on Statistics Canada's Interprovincial Input-Output Model were employed.

BC Stats divides the technology sector into two large categories: manufacturing and services. As such, multipliers corresponding to each of these subsectors were employed, and a weighted average multiplier for the sector was estimated. The corresponding multipliers with the best alignment to each of these categories are as follows:

- Manufacturing – The multiplier for "Computer and Peripheral Equipment Manufacturing" in 2019 was 0.216.
- Services – The multiplier for "Information and Cultural Industries" (which includes information services and data processing as well as telecommunications) was 0.349 in 2019.
- A weighted average multiplier was computed based on the counts of firms in each category (i.e., manufacturing and services). Using these counts, the weighted average multiplier is 0.34. Table 1 provides a summary of this calculation. The indirect economic impact is estimated by multiplying this weighted average multiplier by the total direct economic impact.

Industry	Multiplier	No. of Firms	% of Firms	Weighted Multiplier
Manufacturing	**0.216**	**65**	**5.5%**	**0.01**
Services	**0.349**	**1,107**	**94.5%**	**0.33**
Weighted Average Multiplier				**0.34**

Table 5: Weighted Average Multiplier Calculation

The industries selected for the multipliers were chosen in order to be consistent with the past economic impact studies conducted by VIATEC. Statistics Canada's most recent economic multipliers are for 2020. Given that 2020 was the start of the COVID-19 pandemic, multipliers for 2019 were utilized, as they are more reflective of current economic structures (i.e., non-pandemic years).

Appendix B: Glossary of Key Terms

Economic impact: An estimate of the total changes in the level of economic activity resulting from a project, policy, or industry being analyzed. The total economic impact consists of the sum of the direct, indirect, and induced impact. For this study, only direct and indirect impacts are included in the total economic impact estimate.

Direct impact: The direct impact includes the sum of all direct effects that technology firms have on Greater Victoria due to their operations. This is a measure of the technology sector's primary effect. The direct impact is estimated using the total revenues of firms in the technology sector in Greater Victoria.

Indirect impact: Indirect impacts are "secondary economic effects" resulting from the direct impact. The indirect impact is measured by the change in revenues to firms within Greater Victoria that supply goods and services to the technology sector. For example, the indirect impact includes the impact resulting from technology firms buying goods and services from other local industries to produce their goods or services. The indirect impact is estimated using economic multipliers.

Induced impact: Induced impacts are also "secondary economic effects" of the economic activity generated when technology sector employees and employees of the technology sector's indirect suppliers spend their income on household purchases of goods and services in Greater Victoria. **For the purpose of this study, induced impacts are not estimated, nor are they included in the total economic impact estimate.**

Greater Victoria: Greater Victoria refers to the census metropolitan area (CMA) known as Victoria. There are 35 CMAs in Canada, and the Victoria CMA includes the 13 eastern most municipalities of the Capital Regional District (CRD) on Vancouver Island, as well as adjacent areas and islands.

Multiplier: Economic impact multipliers are estimated using an input-output model. An input-output model represents the flows of economic activity within a region. The model captures what each business or sector must purchase from every other sector to produce a dollar's worth of goods or services. Multipliers are used to quantify how a change in one industry will have spin-off impacts throughout the rest of the economy.