2022 XR Survey

Profile of XR Companies in BC

October 2022

DigiBC
The Creative Technology Association of British Columbia

Nordicity

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Executive Summary

Executive Summary

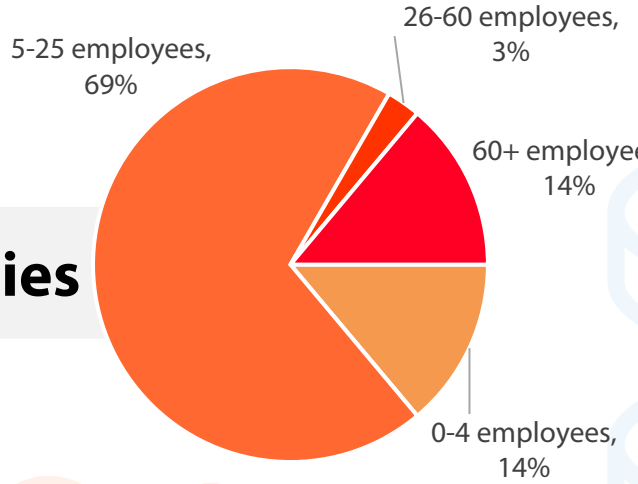
DigiBC is committed to promoting, supporting, and accelerating the growth of BC's creative technology industry comprised of video games, visual effects, animation (VFX), and extended reality (XR). DigiBC seeks to achieve its goal through advocacy and policy engagement, growth programs, talent programs, events, and member benefit initiatives.

DigiBC engaged Nordicity, a leading research and analysis firm, to conduct consultation of XR companies in BC.

The purpose of the consultation survey and interviews were to assemble a profile of the XR industry in BC, while collecting strategic data to help DigiBC facilitate the ongoing growth of this sector.

The research herein was prepared by Nordicity and constitutes Nordicity's interpretation and analysis of the survey results and interview findings collected in 2022.

XR in British Columbia in 2022



36 Core Companies

33% actively seeking investors

Revenue Sources

- **24%** from BC
- **24%** from the US
- **35%** from overseas

Top 3 Markets

- Entertainment
- Education
- Retail

63% offer both products and services

Employment Impact

The core XR sector generated **590 FTEs** in 2021/2022

77% beyond the start-up stage, generating stable or growing revenue

Top 3 In-Demand Skills

- Game development and design
- 3D modelling, animation, art
- Software

Average Salary

- Senior (6+ years) **$118k**
- Intermediate (2-6 years) **$75k**
- Junior (0-2 years) **$56k**

Product Type

- **68%** software
- **63%** app

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About the Project

1.1 Background & Objectives

The purpose of this research was to determine the size and orientation of commercially oriented augmented reality (AR) and virtual reality (VR) companies (collectively known as extended reality companies "XR companies") in BC, while collecting data to support DigiBC facilitate the ongoing growth of this sector. As part of the work, data objectives included (but were not limited to) exploring:

- what XR companies in BC create (e.g., original IP, products, and/or service work);
- in what other industry verticals XR operates (e.g., education, healthcare, etc.);
- how many people work in the XR industry;
- the demographics of the XR industry (as they compare to the wider BC population) with consideration to founder from underrepresented and/or marginalized communities;
- the industry's perceived growth trajectory; and,
- what the sector may need to achieve that growth (in broad terms).

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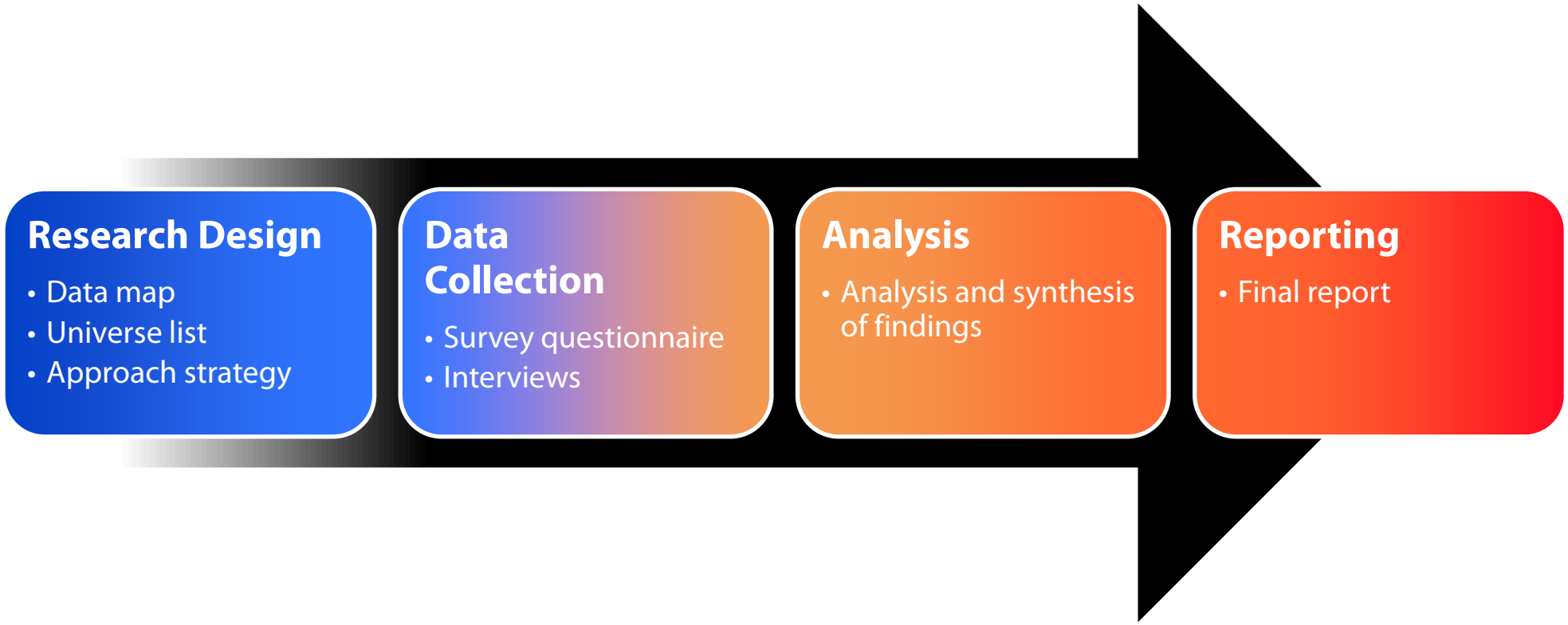
1.2 Project Methodology

This report is the culmination of the XR Survey process, as presented in the graphic below:



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1.3 XR Universe in BC

Using a mixed methodology approach, Nordicity and DigiBC compiled a universe list of XR companies found in BC. The criteria used for identifying XR companies specifically looked at commercially oriented companies that have significant XR service activity and/or are developing XR products (such as software, hardware, apps, and LBEs).

The universe list identified **36 core companies.**

Of the 36 companies, **14%** identified as micro (0-4 employees), **72%** identified as small to medium (5-59 employees), and **14%** as large (60+ employees).

In addition, the research team contacted some game companies that participate in XR projects/services to best understand the scope of the sub-sectors activities. For the purposes of this work, these game companies are categorized as a peripheral sector and are not part of the XR industry. They are not included in the core universe list.

1.4 About the Consultation

The survey was deployed from June 1st to September 26th, 2022.

The survey garnered 18 complete responses, to which were added direct interviews collecting the same core data and exploring additional themes. In total, the sample consulted makes for a **response rate of 53%.** Survey findings were bolstered through a series of thematic interviews and computer-assisted telephonic interviews with industry leaders.

Additionally, the research team included partial answers from large companies in the survey analysis results. The inclusion of partial answers explains why some of the figures presented in this report are based on a larger sample than the 19 complete consultations.

CORE XR INDUSTRY	Micro (0-4 employees)	Small (5-25 employees)	Medium (26-60 employees)	Large (60+ employees)
Universe: 36	5	25	1	5
Consultation sample (survey plus interviews): 19 (53%)	3 (60%)	13 (52%)	1 (100%)	2 (40%)

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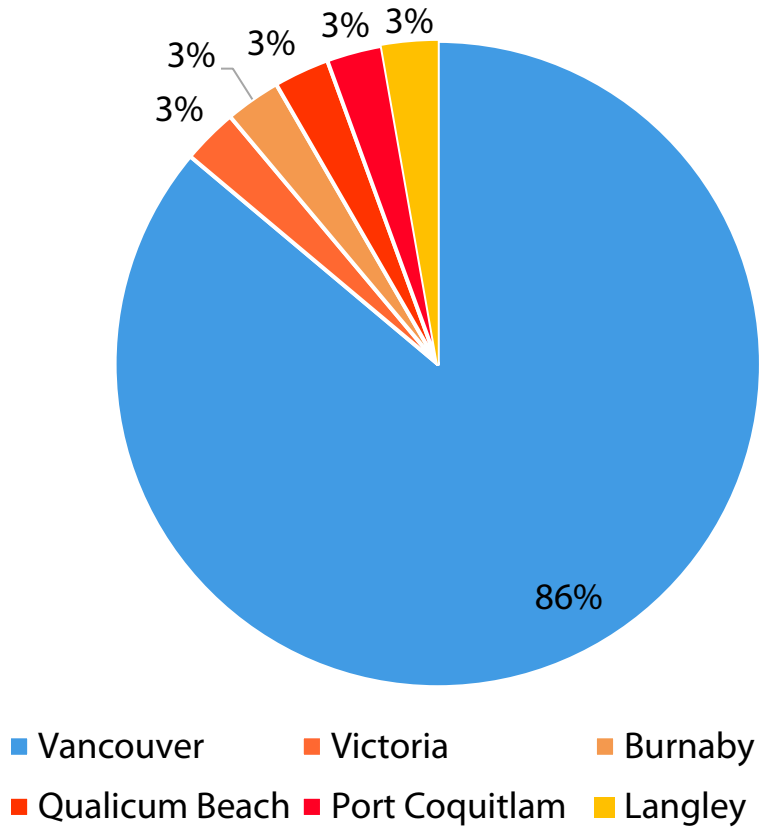
Profile of the XR Sector in British Columbia

2.1 Respondent Profile | Organization Location

The largest proportion of core XR companies (86%) are **located in Vancouver**. Other places include Victoria, Burnaby, Qualicum, Port Coquitlam and Langley, with one company established in each of these locations.

Notably, these locations are all urban centres in BC. This finding may reflect a desire to be near resources (e.g., human, financial, and infrastructure) and key client industries (see Figure 8).

Figure 1: Organization Location (n=36)



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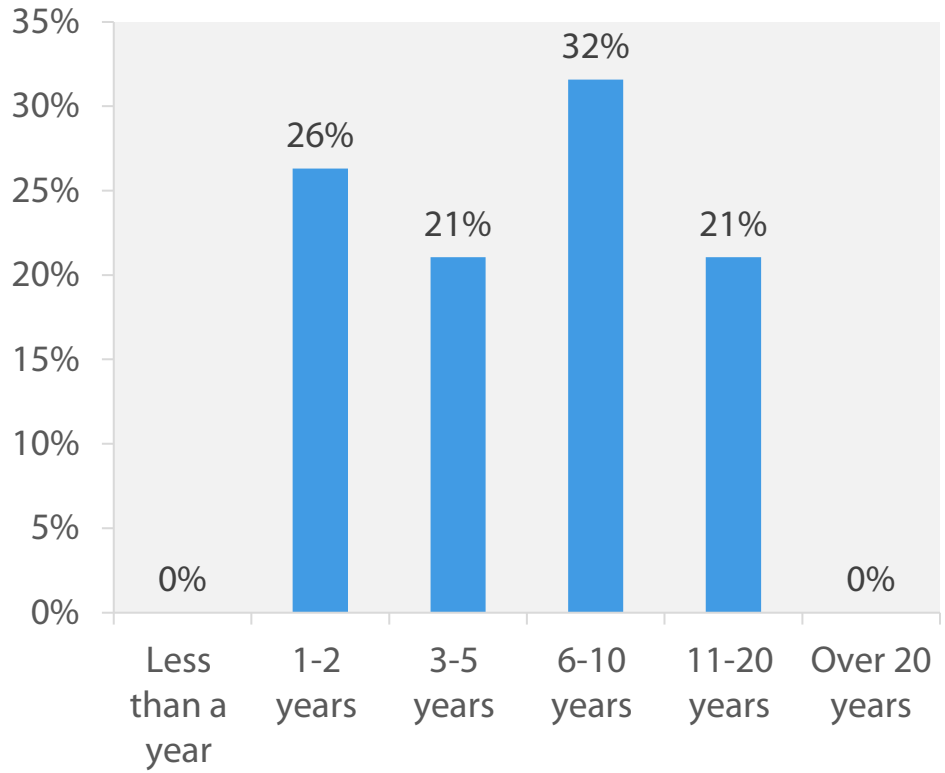
2.1 Respondent Profile | Years Established

Most respondent companies have been established between 6-10 years (32%) and 1-2 years (26%).

Companies that identified as being established for 3-5 years and 11-20 years each made up 21%.

Notably, the industry survey did not garner any responses from companies that have been established for less than a year or for over 20 years, and therefore this finding should be taken with caution. We recognize that the technological entrepreneurial fabric in BC is vibrant and XR companies are still being created in 2022. Similarly, "legacy" companies such as Microsoft and EA have been established for over 20 years and play a key role in the resourcefulness of the XR sector in BC.

Figure 2: How many years has your organization been established in the region's XR industry? (n=19)



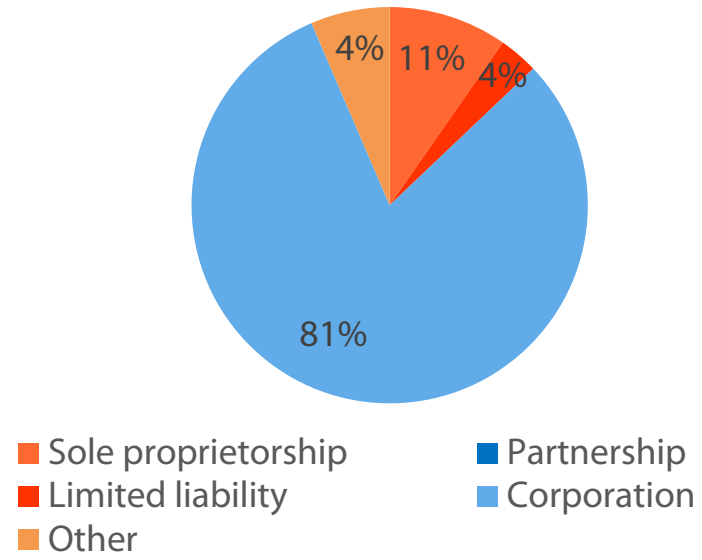
2.2 Industry Classification | Structure & Ownership

Corporate Structure

81% of survey respondents identified as a corporation.

Other survey responses included sole proprietorship (11%), other (4%, e.g., non-profit), and limited liability (4%).

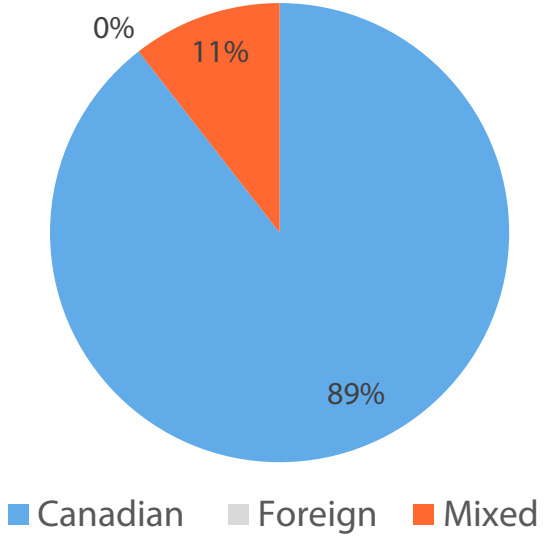
Figure 3: Corporate Structure (n=19)



Ownership

Most survey respondents identified as being Canadian owned (89%), while the rest identified as being a mixture of Canadian and foreign owned (11%).

Figure 4: Ownership (n=19)



2.2 Industry Classification | Products & Services

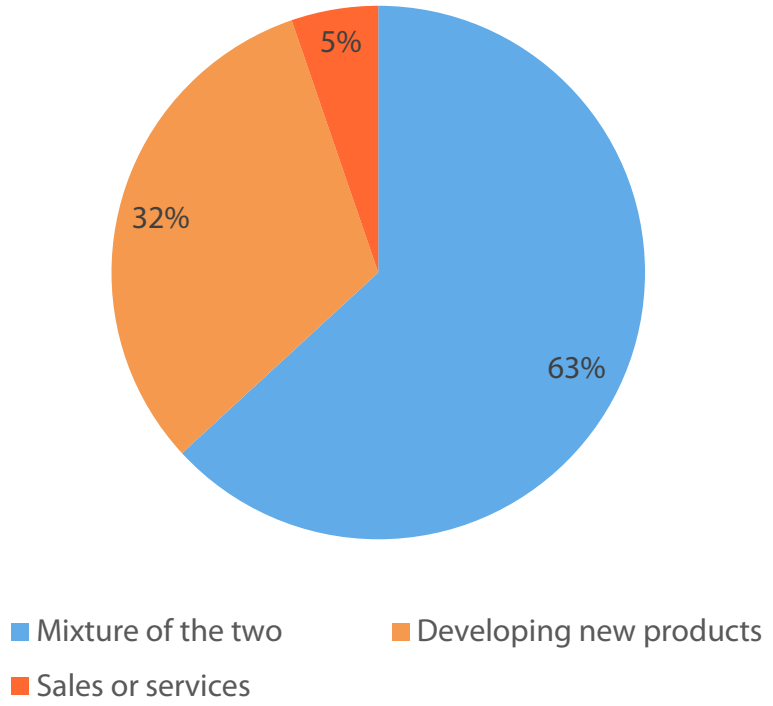
When asked what types of products and/or services they create, it was found that most companies develop products and offer services (63%).

Products include hardware to access XR experiences (e.g., head mounted displays such as Oculus Quest 2, HTC Vive, Google Glass), as well as haptic hardware (e.g., gloves and garments that improve XR experiences).

Services include the development of custom apps and simulation, distribution platforms, design, and consulting.

Furthermore, 32% of companies indicated focusing on developing original products and intellectual properties.

Figure 5: What products and/or services does your company create? (n=19)

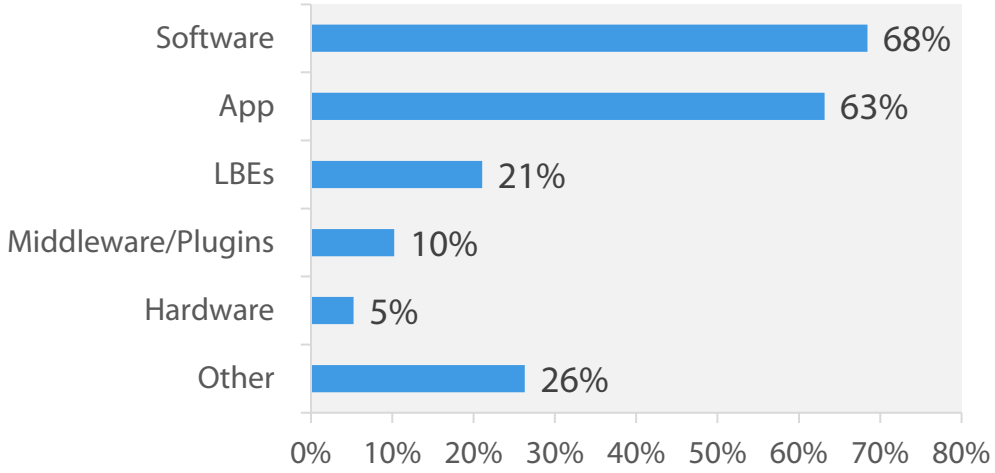


2.2 Industry Classification | Technology

Main Products and Services

Software (68%) and Apps (63%) are the two products primarily developed by BC companies. Other included Volumetric Capture, Motion Capture, and Spatial BI.

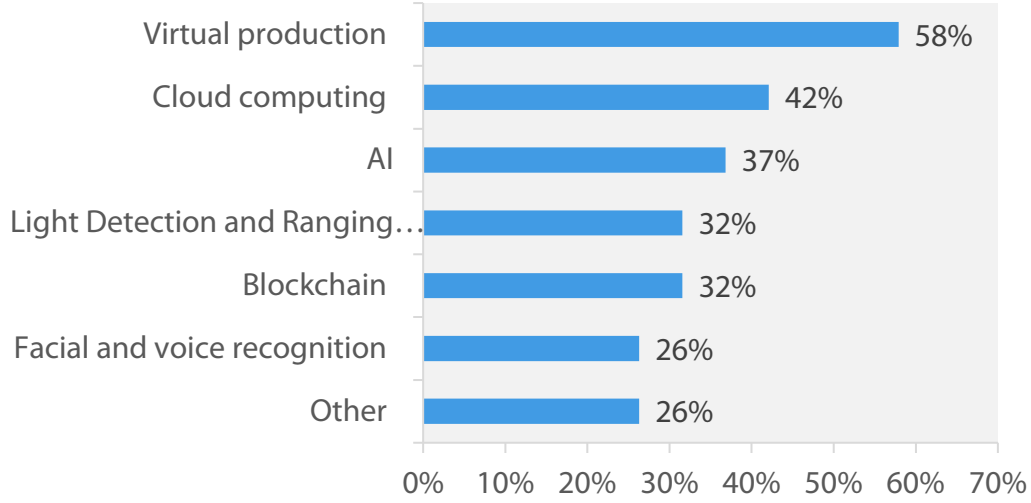
Figure 6: What are your main XR products and/or services? (n=19)



Adjacent Technology Used

The top three technologies used by XR companies included Virtual Production (58%), Cloud Computing (42%), and AI (37%). Other included IOT, GIS, Reality Capture, Photogrammetry, and Edge Computer.

Figure 7: What are some of the additional technologies you use? (n=19)



Note: Respondents could select more than one option for in both questions.
LBE = Location Based Entertainment / AI = Artificial Intelligence

2.2 Industry Classification | Industry Verticals

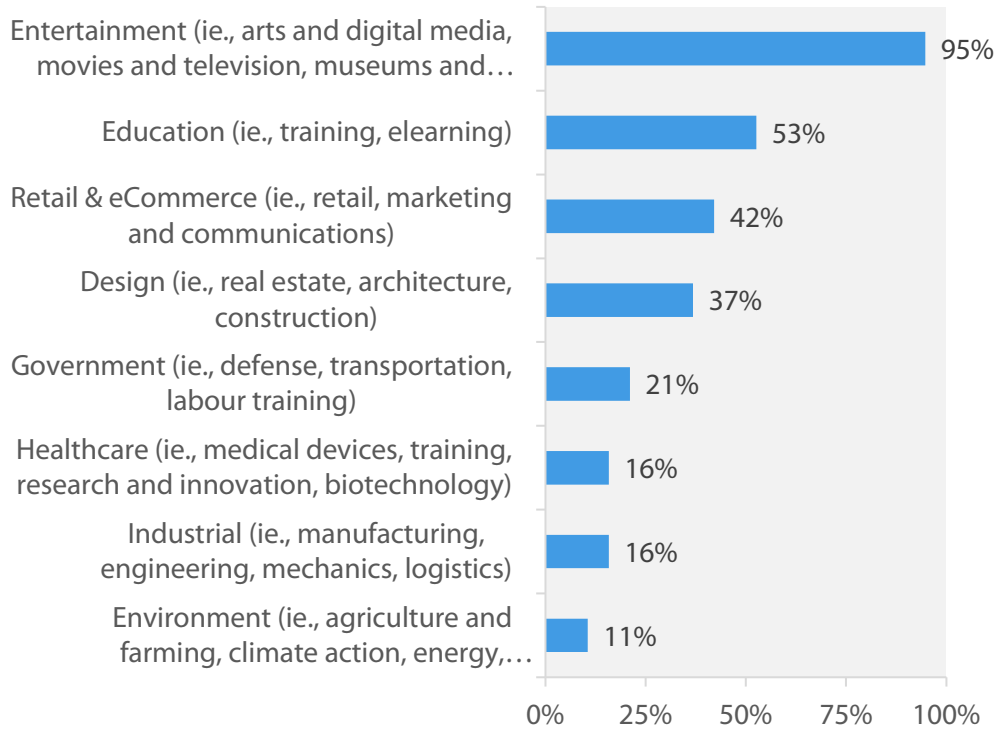
The figure on the right illustrates the various verticals in which XR companies operate (i.e., client industries).

The vast majority of survey respondents (95%) identified operating in the entertainment industry. BC's robust video game and film and TV economy offers numerous opportunities to the vibrant XR industry, in particular with the growing demand driven by the recent and fast adoption of virtual production (see Figure 7).

The growth of XR solutions has led to expansion into a myriad of other industry verticals, as identified by survey respondents. For example, education (53%), retail and e-commerce (42%), and design (37%) were also significant client industries.

Industry members voiced that companies need continue to think beyond entertainment and cross-pollinate further into other verticals to be seen as cutting-edge leaders. For instance, XR applied to biodesign is seen as a promising market where BC companies could play a leading role.

Figure 8: In what industries do you operate? (n=19)



Note: For this question, respondents were asked to select the top three industries in which they operate.

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2.3 Employment | Employment Levels

Another measure of the size and health of an industry is the number of people it employs.

On average, it was found that companies have approximately 13 full-time employees, 2 part-time employees, 3 temporary/contract employees, and 3 freelance employees.

While the sample did not include any of the large companies, Nordicity estimates that the core XR sector in BC generated **590 Full-Time Equivalents** (FTEs) in 2021/2022, an average 17 FTEs per company. This average reflects the initial scan of the industry which indicated that companies with 5-25 employees account for about 70% of the universe.

It was also found that many companies hire a notable numbers of freelance employees. This practice seems to be more prevalent among micro and small companies (under 25 employees). For example, one survey respondent identified employing 20 freelancers while counting only 3 permanent employees.

Table 1: Employment by type, fiscal year 2021/2022 (n=16)

	Average # of employees
Full-time, regular salaried employees	13
Part-time, regular salaried employees	2
Temporary/contract employees	3
Freelance	3

Table 2: Employment by seniority, fiscal year 2021/2022 (n=17)

	Average # of employees
Senior (supervisory and management level staff and/or 6+ years of experience)	6
Intermediate (regular and intermediate-level staff and/or 2 to 6 years of experience)	9
Junior (support level staff and/or less than 2 years of experience)	4

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2.3 Employment | Wages

According to survey respondents, the overall average salary for a senior level employee is **$118,000**, **$75,000** for an intermediate level employee, and **$56,000** for a junior level employee.

Interviews confirmed the fierce competition for senior talent (observed across the tech sector). In order to attract and retain senior talent with the specific XR skillset, companies have to offer attractive packages that vie with other industries.

The survey findings suggest that the XR industry could be better positioned to secure senior talent than markets such as the broader video games industry, as it pays comparable wages (if not slightly better).

Table 3: What is your companies average employment salary by level of seniority? (n=17)

Seniority level	BC XR Industry average wage $	Canadian Video Game Industry average wage $ (ESAC 2021)
Senior (supervisory and management level staff and/or 6+ years of experience)	$118,000	$98,000
Intermediate (regular and intermediate-level staff and/or 2 to 6 years of experience)	$75,000	$78,400
Junior (support level staff and/or less than 2 years of experience)	$56,000	$53,500

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2.3 Employment | Demographics

This survey tried to capture, to some extent, the demographics of the XR industry with particular consideration to individuals from equity-deserving communities.

According to the survey results, the XR industry in BC is found to employ a relatively high number of persons under the age of 35 (37%).

While the industry also employs a notable share of racialized individuals (25%), there is room for improvement when compared with the broader BC tech industry.

Additionally, 32% of the XR workforce identified as female. Comparatively, 33.2% of tech workers identify as women (CBRE Group Inc. 2021), while 20% of the overall BC workforce is female (StatsCan).

Table 4: Please indicate the percentage of your workforce in the following areas: (n=12)

	XR industry BC % of workforce	BC Tech Industry General % of workforce (CBRE Group Inc. 2021)	BC % (StatsCan 2016 and Province of BC)
Women	32	33.2	20
Youth (under 35)	37	25	25
Racialized*	25	41	30
2SLGBTQ+	9	8.3	-
Gender-diverse	8	-	-
Indigenous	7	.7	6
Black	5	3	1
Disability	5	2.9	15
Deaf	1	-	7

*The concept of racialized population is measured with the 'visible minority' variable in this release. 'Visible minority' refers to whether or not a person belongs to one of the visible minority groups defined by the Employment Equity Act. The Employment Equity Act defines visible minorities as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour"

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2.4 Revenue | Revenue Generation by Jurisdiction

Survey respondents were asked to identify what percentage of their revenue was generated across jurisdictions.

In 2021/2022, 35% of the XR sector's total revenue was generated from foreign jurisdictions (outside of Canada and the US), 24% from within BC, 24% from the US, and 16% in Canada (excl. BC).

Cross-tabulation seems to indicate that the larger the company, the more revenue it generates from international sources.

Table 5: Percentage of the industry's revenue generated in various jurisdictions, 2021/2022 (n=11)

	% of revenue
BC	24
Canada (outside of BC)	16
US	24
Foreign (outside of Canada and US)	35

2.4 Revenue | Revenue Generation by Industry Vertical

Survey respondents were then asked to identify what percent of their revenue was generated within a variety of industry verticals.

The XR industry in BC generates a third (35%) of its total revenue from works in the entertainment industry. XR companies that work with this industry earn most of their revenue from entertainment projects (65% on average).

While companies might decide to focus on one or two key industry verticals, in general they seem open to pursuing opportunities in secondary verticals.

Table 6: Percentage of the industry's revenue generated across various industry verticals (n=16)

	Weighted average
Entertainment (e.g., arts and digital media, movies and television, museums and galleries, sports, and gaming)	35
Design (e.g., Real estate, architecture, construction)	28
Retail and Ecommerce (e.g., retail, marketing, communications)	19
Education (e.g., training, e-learning)	7
Industrial (e.g., manufacturing, engineering, mechanics, logistics)	3
Government (e.g., defense, transportation, labour training)	4
Healthcare (e.g., medical devices, training, research and innovation, biotechnology)	2
Environment (e.g., agriculture and farming, climate action, energy, conservation management)	2

Note: Survey respondents were able to select more than one option for this question.

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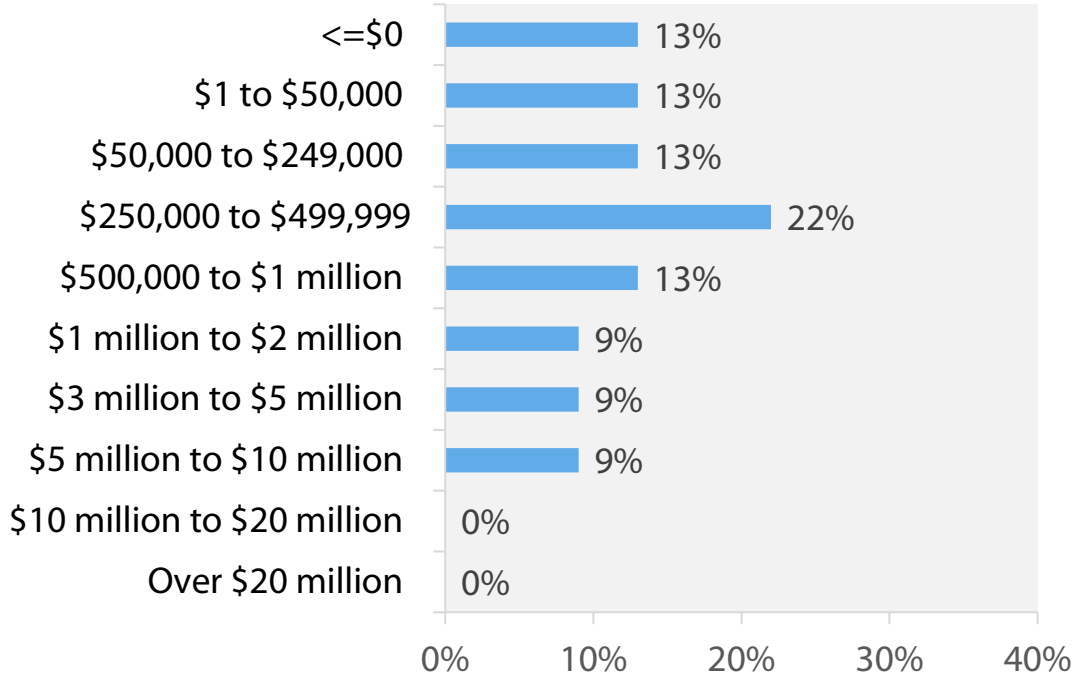
2.4 Revenue | Gross Revenue

22% of survey respondents reported generating between $250,000 and $500,000 in gross revenue in the last fiscal year. Furthermore, 40% earned $500,000 or more in 2021/2022.

On the other end of the spectrum, 13% indicated that they did not generate any revenue in the last fiscal year.

Figure 9: Breakdown of respondent companies by gross revenue generated in 2021/2022 (n=19)



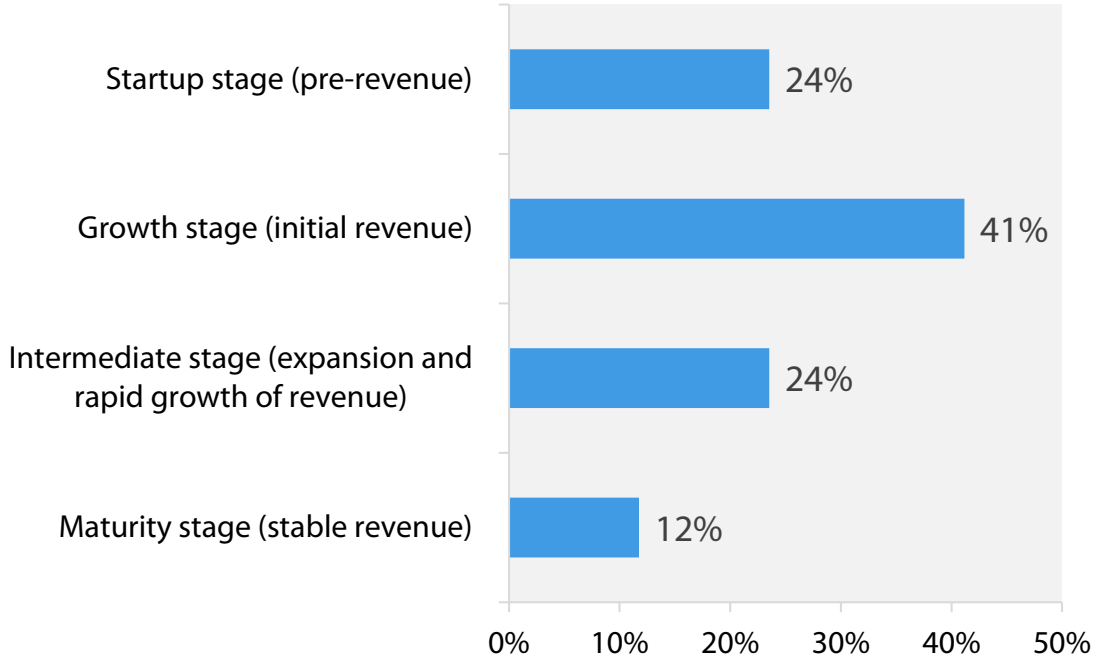
2.5 Company Maturity

About 77% of survey respondents are past the start-up stage and are generating stable or growing revenue.

More precisely, 41% of respondents identified being in the growth stage, followed by 24% in start-up stage, 24% in intermediate stage, and 12% in maturity stage.

The predominance of small companies (5-25 employees) could explain the present distribution of maturity profiles in the XR industry.

Figure 10: Maturity/development stage of respondent companies (n=17)



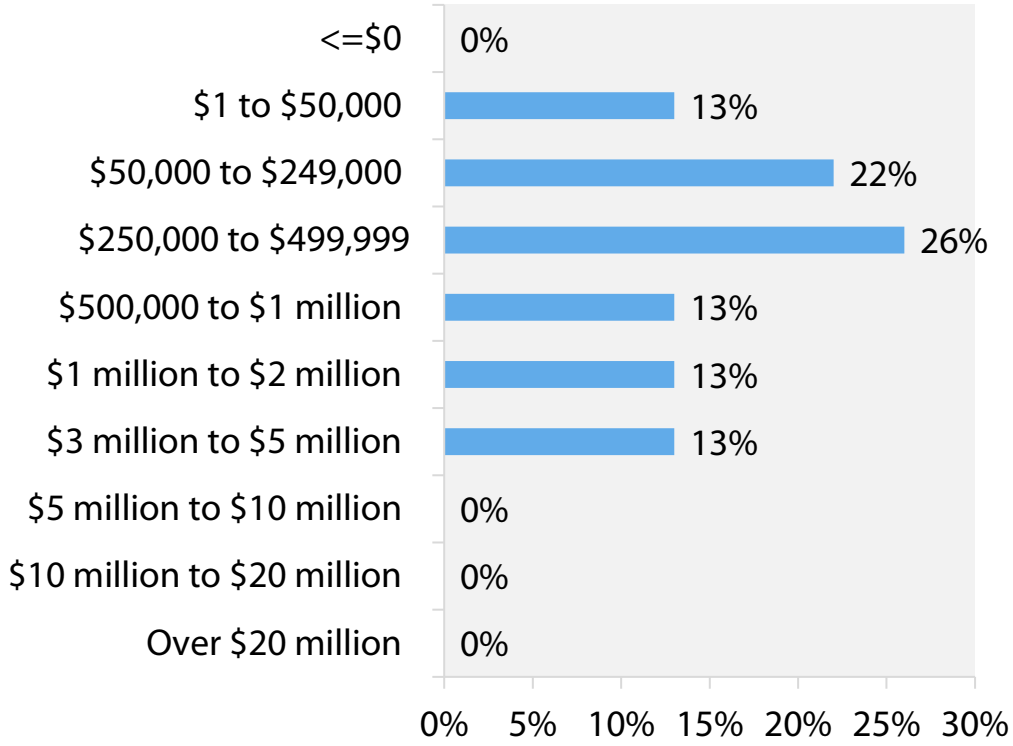
2.6 Expenditures | Gross Expenditures

Gross expenses follow a similar distribution as the industry's revenue breakdown (Figure 9).

26% of survey respondents reported expenses between $250,000 and $500,000. Significantly, 39% indicated expenditures over $500,000 for the 2021/2022 fiscal year.

The survey also found that 76% of labour related expenses in the past fiscal year were directly associated to company products/services.

Figure 11: Breakdown of respondent companies by gross expenditures in 2021/2022 (n=20)



Looking Ahead

3.1 Looking Ahead

Research participants (survey respondents and interviewees) were asked a series of questions related to their thoughts on the perceived growth trajectory of the XR industry.

Increased demand for investors, competitive tax credits, greater need for skilled workers, international competition for talent, and rising operational expenses and costs are all drivers of change and strategic factors that XR companies in BC are monitoring.

This section explores some of these areas as well as the general industry outlook.

> *Our product (technology) got a good boost during COVID, as more people and companies were moving almost exclusively to an online, virtual, and remote capacity. So, we expect this trajectory to continue to improve in the next few years.*
>
> Interview Participant

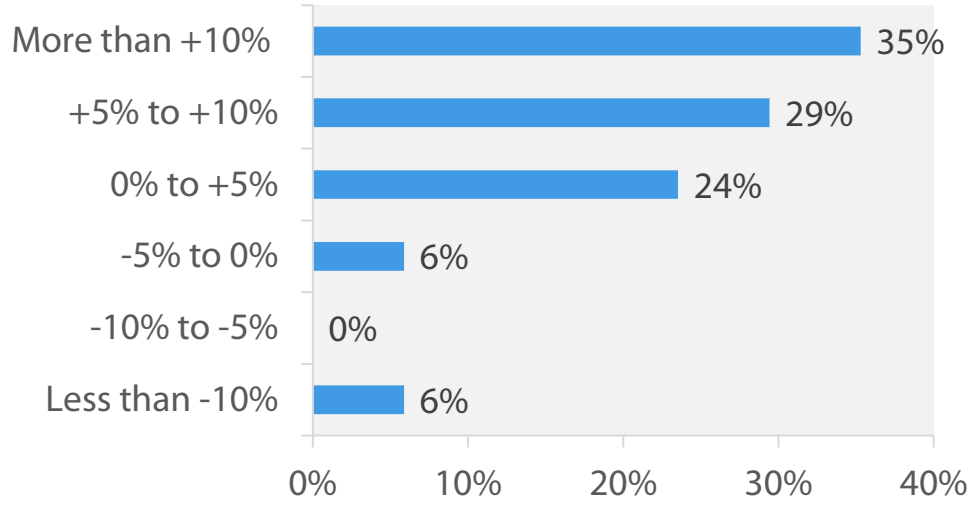
3.2 Revenue | Revenue Expectations

12-month Horizon

Over the next 12 months, 35% of respondents expect revenue to increase by more than 10%, showing a general confidence in the market for fiscal year 2022/2023.

Notably, only 6% of respondents expect their revenues to decrease by 10%.

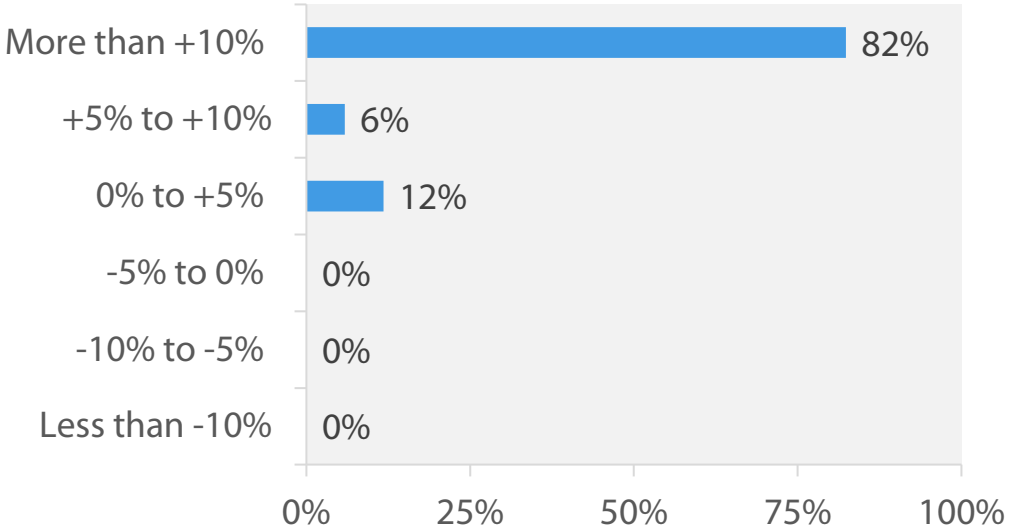
Figure 12: What are your revenue expectations over the next 12 months? (n=17)



5-year Horizon

82% of survey respondents expect their revenue to increase by more than 10% over the next 5 years. This finding underlines the general positive outlook felt within the XR industry.

Figure 13: What are your revenue expectations over the next 5 years? (n=17)



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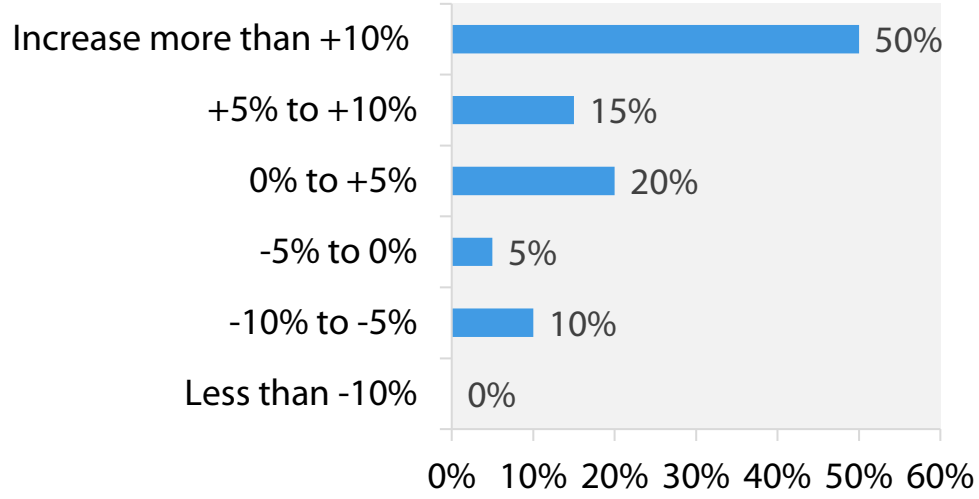
3.3 Expenditures | Expense Expectations

12-month Horizon

Over the next 12 months, 50% of survey respondents anticipate that organizational expenses will increase more than 10%, nuancing the bright expectations on the revenue side.

15% estimate they might be able to decrease their total expenses.

Figure 14: How do you anticipate your organizations expenses to change over the next 12 months? (n=20)

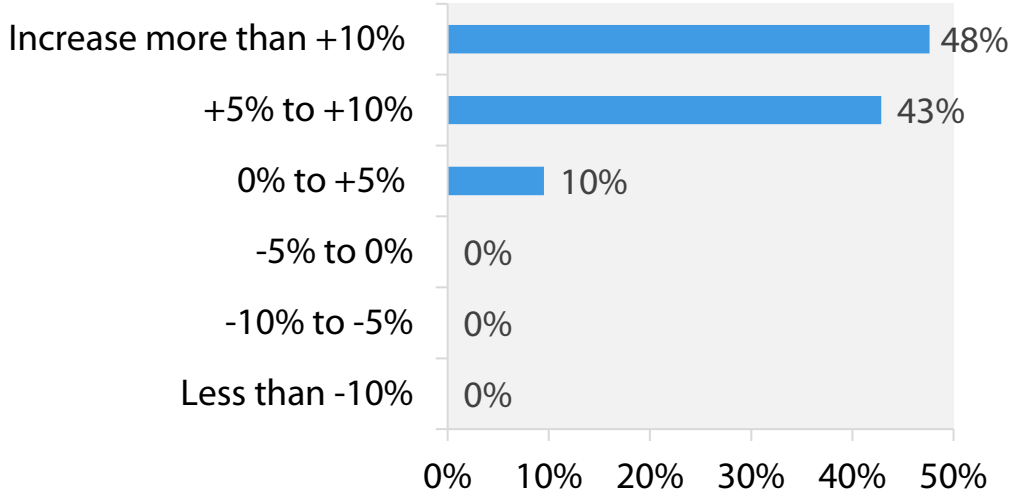


5-year Horizon

All respondents expect expenses to increase over the next 5 years.

48% of survey respondents expect expenses to increase more than 10%. This figure suggests rising concerns around inflation and the general cost of doing business for XR companies.

Figure 15: How do you anticipate your organizations expenses to change over the next 5 years? (n=21)



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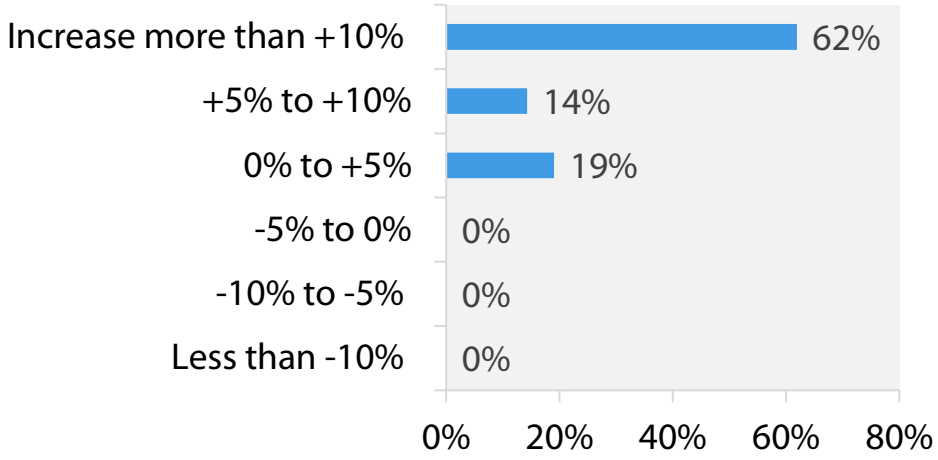
3.4 Workforce | Projected Growth

All survey respondents anticipate their companies will grow their headcount over the next 12 months. This optimism should be embraced as a massive opportunity and advantage to further grow the industry.

62% anticipate growth of more than 10% of their total workforce and 19% anticipate an increase of up to 5%.

Figure 16: Anticipated workforce growth, next 12 months (n=20)



On average, survey respondents expect to hire 2 senior level staff, 4 intermediate level staff, and 4 junior level staff in the next 12 months. The number of hires signals the growing demand for talent in the XR sector (a demand also rising in other tech industries).

Indeed, one company expects to hire approximately 20 senior level staff in the next 12 months, demonstrating solid confidence in the near future.

Table 7: Estimated number of expected hires in the next 12 months, by level of seniority (n=19)

	Average # of hires
Senior (supervisory and management level staff and/or 6+ years of experience)	2
Intermediate (regular and intermediate-level staff and/or 2 to 6 years of experience)	4
Junior (support level staff and/or less than 2 years of experience)	4

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3.4 Workforce | Securing Talent

Over the next 5 years, survey respondents expressed mixed-feelings about their ability to secure experienced talent in BC. While 45% of respondents are not confident that they will be able to fill future positions with locally sourced talent, 14% are very confident.

Contrastingly, when asked how confident they are in their ability to secure experienced international talent, 45% of survey respondents felt confident and 18% felt very confident. In a world where remote-work has become a norm, hiring overseas is increasingly a solution for companies that face competition for talent.

Overall, the ability to gain skilled local talent continues to be an issue, but companies are more confident in their ability to secure international talent. That being said, participants voiced varying opinions about seeking off-shore talent. While some are supportive, others are not pursuing that route.

Figure 17: Over the next 5 years, how confident are you in your ability to secure experienced talent in BC? (n=22)

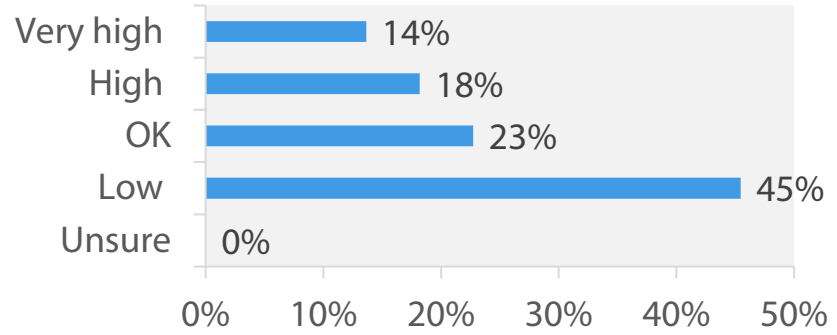
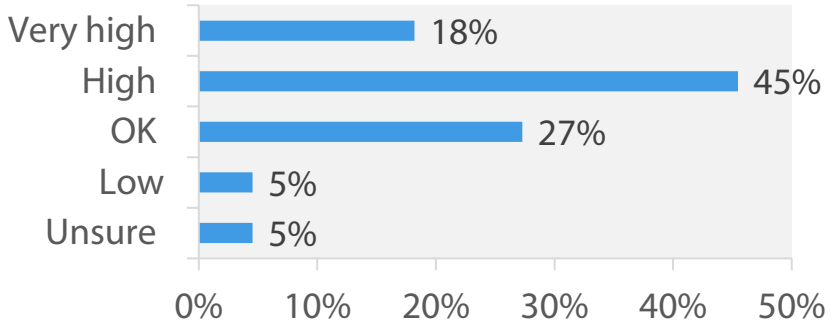


Figure 18: Over the next 5 years how confident are you in your ability to secure experienced international talent? (n=22)



Note: remote work has been a topic of concerns for policy makers and companies. In fact as companies hire resources based in other provinces or overseas, they might found their project not eligible for local tax credits.

3.4 Workforce | Securing Talent

"Pretty serious job competition across the sector front. There is a large shortage of senior talent in the industry. The ratio to senior to juniors is off (in terms of ability to grow teams, mentor, etc.). The number of senior people needed is much faster than the growth of the industry pace."

Interview Participant

"Growing significantly due to innovation in the field. However, lower cost options in terms of areas such as hiring by going offshore doesn't feel this suits the innovation game."

Interview Participant

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3.4 Workforce | Training and Skills

Survey respondents identified what they consider the most significant skill needs for XR.

Game development and design, software development, and 3D modeling, animation, and art were identified as the top three skills sets.

XR companies also increasingly require a deeper understanding of emerging technologies such as artificial intelligence and machine learning.

Table 8: What are the most in-demand skill sets needed for XR companies in BC? (n=17)

Rank	Skill set area
1	Game development and design
2	3D modeling, Animation, Art
3	Software development (web/mobile)
4	AI, Data Science, Machine Learning, Engineering
5	UI/UX Design
6	Visual effects art and design
7	Architecture design and technology
8	Computer vision
9	Business development
10	Other
11	Marketing
12	Sound design for visual media
13	Graphic design
14	Business operations

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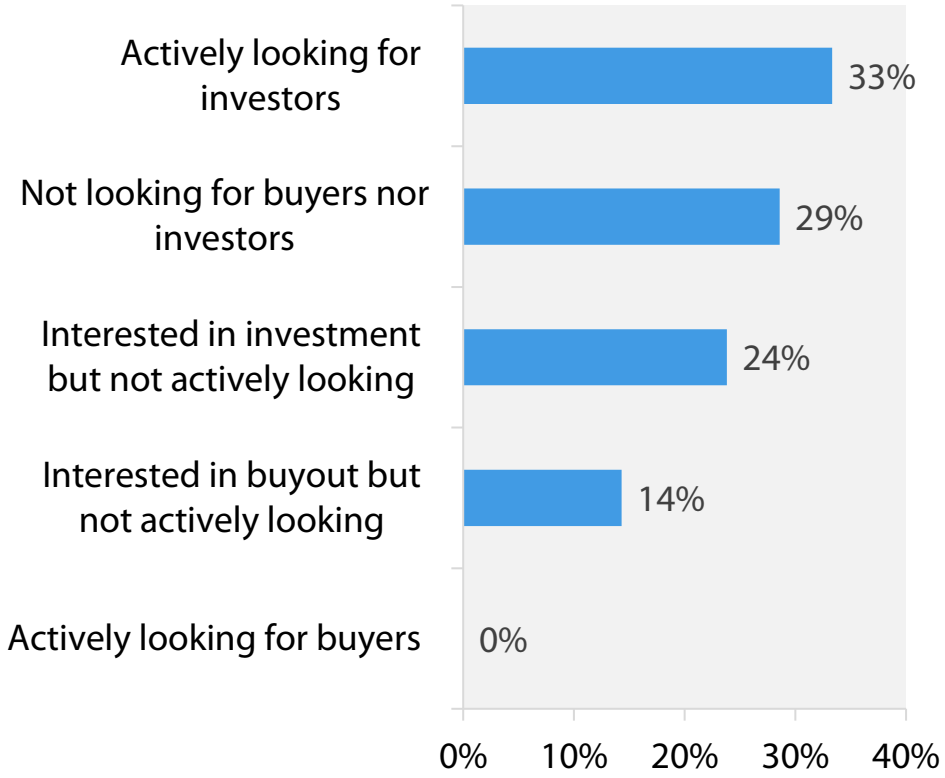
3.5 Investment Objectives

When asked to describe their investment objectives over the next 12 months, 33% of survey respondents stated they were actively looking for investors, 29% were not looking for buyers nor investors, and 24% were interested in investment but not actively looking.

While 14% stated they could pursue buyout opportunities, no respondents disclosed being actively looking for buyers.

Access to capital continues to be one of the greatest challenges identified in the research. Participants expressed that finding serious investors that want to invest in Canadian-made innovation was difficult.

Figure 19: Private investment objectives for the next 12 months? (n=21)



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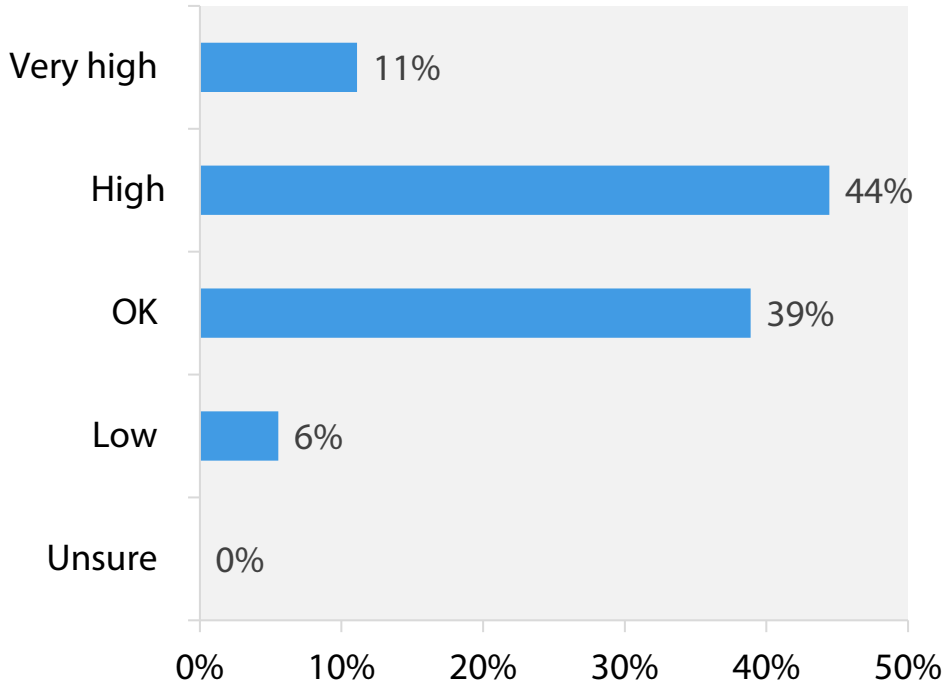
3.6 Key Trade Markets

Most survey respondents were confident in their ability to access key trade markets over the next 5 years. 44% were confident and 11% were very confident.

However, 39% felt only somewhat confident, while 6% felt not confident.

Overarching this continued access to key trade markets is the greater need for strong industry advocates, increasing education programming for consumers, and the focus on creating cheaper immersive device options.

Figure 20: Over the next 5 years, how confident are you in your ability to access key trade markets? (n=18)



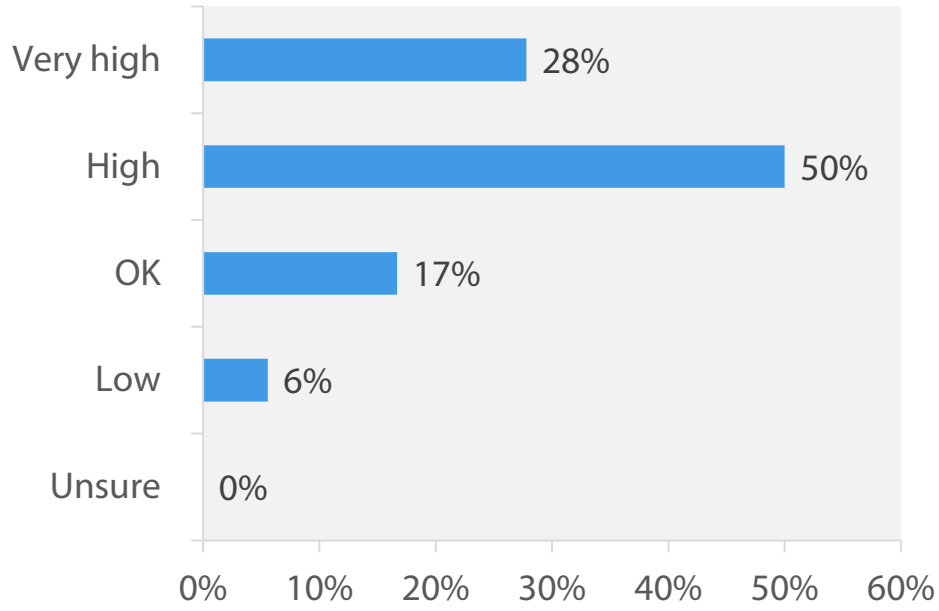
3.7 Access to Clients

Over the next 5 years, 50% of survey respondents are confident and 28% are very confident in their ability to access business clients/customers.

Some participants noted that they will have to seek international clients, because Canada lacks companies that are willing to invest in innovative solutions such as XR. One could expect the share of overseas clients/customers in the total revenue to significantly increase in the medium term.

Other respondents were either somewhat confident (17%) or not confident (6%) in their ability to access business clients/customers.

Figure 21: Over the next 5 years, how confident are you in your ability to access business clients/customers? (n=18)



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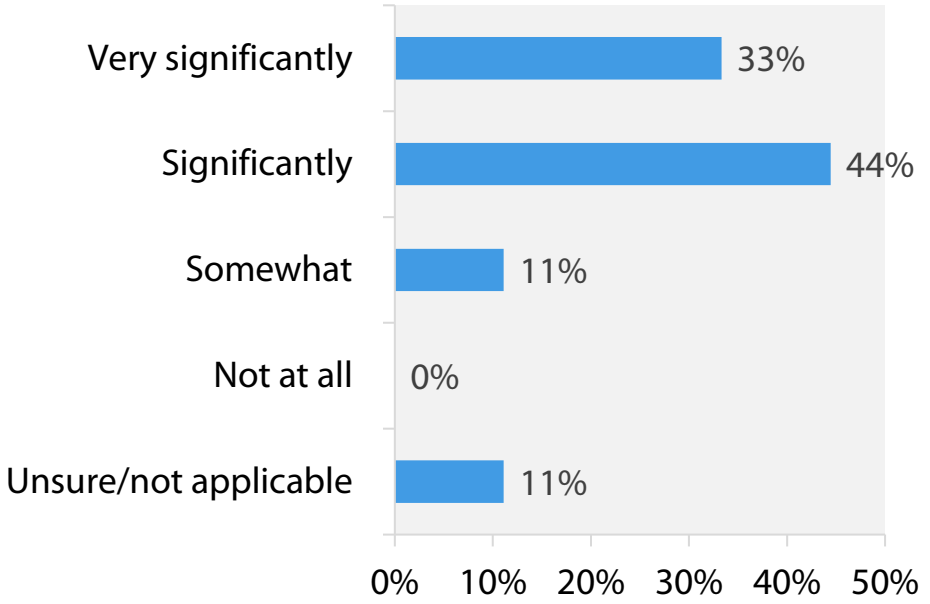
3.8 Perceived Competition

A notable share of survey respondents felt that the evolution of global competition would have a significant impact (33%) or a very significant impact (44%) on their operations over the next 5 years.

It is possible that the high perceived foreign competition could be related to competitive tax incentives, limited diversified funding options, access to investment, as well as increased competition with lower wage paying countries, according to survey and interview participants.

Therefore, ensuring BC and Canadian tax policies (e.g., corporate tax, digital interactive media tax credits) remains competitive is critical for BC-based companies to fully unlock their competitive potential.

Figure 22: Over the next 5 years, how do you perceive the competition from foreign jurisdictions for areas such as talent, technology, patents and IP to impact your business? (n=18)



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3.4 Perceived Competition

"Ensuring Canada and BC tax policy remains reasonable is key --corporate tax, media tax credit– this determines what teams are located where.

Interview Participant

"[The sector needs] competitive tax credits with other provinces in Canada. We need the continuation and/or increase of tax credits like IDMTC."

Interview Participant

"We are competing with low wage paying countries to get work done. [Vancouver] is a high salary place!"

Interview Participant

End

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Glossary of Terms

XR Company: Commercially oriented companies that are key players in the creative technology industry (organizations that indicate having a lot of XR activity and/or developing XR products).

Secondary Company: Companies that operate alongside XR companies or use XR products (operating where XR may be a peripheral activity).

Creative Technology Industry: Sector which includes video games, visual effects (VFX), animation, and mixed reality (XR).

Company Sizes: Companies were divided into five categories: Micro (0-5 employees), small (6-10 employees), medium (11-50 employees), large (51-100 employees), and extra large (more than 100 employees).

Industry Verticals: Refers to different fields and/or industries that a sector may work across.

N-values: The number of respondents to a survey question, which is often used in the data analysis related to that question.

FTE: Full-time equivalent is a measure of employment. FTE can mean, for example, that three part-time employees each working a third of a year make up one FTE.