

LEADING THE PACK

ACCELERATING THE
SUCCESS OF THE
CANADIAN HEALTH
SCIENCE INDUSTRY



Introduction

OBIO is proud to present 'Leading the Pack: Accelerating the Success of the Canadian Health Science Industry', our 2020 health science industry report. The report presents the recommendations based on the feedback of industry leaders and company executives from across the country who took part in the consultation.

Amid the pandemic, there is significant opportunity for Canada's health science industry to become a global leader in the bioeconomy. The optimism for the future of the health science industry that was expressed in the face of the pandemic is extremely encouraging. The recommendations within the report represent a vision for the changes needed to unlock the potential of Canada's health science industry to drive economic growth and deliver the best care to all Canadians.

I want to thank everyone who took the time to participate in OBIO's consultation and in the launch of this report. In particular, I would like to thank Jeremy Bridge-Cook, Joe Eibl, Scott Phillips, Cameron Piron, and David Young for their contributions and for participating in the launch on October 29.



Gail Garland

President and CEO
OBIO

"I am optimistic about the future of the Canadian health science industry. Fundamentally, this pandemic has been a fabulous case in point for the importance of in vitro diagnostics in healthcare. Countries with robust diagnostic tests were able to contain the pandemic and save lives. Investing in RNA and DNA extraction and molecular diagnostic tests is not only good business but it is also a tremendous investment in the future of our country."



Jeremy Bridge-Cook

CEO
Rna Diagnostics

"The Covid pandemic has created an increased awareness of the value of a homegrown medical science industry. Beyond our excellent research capacity we need to shift the focus downstream to commercializing technologies if we are going to ensure that Canadians have access to the latest Canadian technology innovations. This not only takes capital but regulatory and reimbursement pathways that are globally competitive so companies will stay here and grow here."



Joe Eibl

CEO
Flosonics Medical

"The Canadian health science industry is still largely in its early stages but with the right encouragement for entrepreneurs and enough capital and talent we will achieve a flywheel effect and produce a critical mass of successful commercial companies."



Scott Phillips

Founder and CEO
StarFish Medical

"The pandemic has created a huge global awareness of the health science industry. We need to participate in the global surge in medical technologies by building anchor companies or we will get left behind."



Cameron Piron

President
Synaptive Medical

"What drives innovation is capital and what drives capital is return on capital. In fostering a culture in which hospitals are willing to adopt innovative technologies through initiatives like OBIO's Early Adopter Health Network, everyone benefits. Creating opportunities for companies to succeed faster is what the health science industry needs in Canada."



David Young

Co-founder and CEO
KisoJi Biotechnology

Leading the Pack: Accelerating the Success of the Canadian Health Science Industry

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Executive Summary

The ongoing Covid-19 pandemic has caused huge social and economic disruption across the world. The health science industry has taken centre stage in the response to the pandemic and many experts have linked global economic recovery to the timely development of effective diagnostic tests, vaccines, and therapies that could be used in combination to control Covid-19.

Beyond the resolution of the pandemic itself, the health science industry has the opportunity to become a pillar of the economy in the long term and it has the potential to create value by addressing all aspects of human health. The sector contributes only 0.45% to Canada's total GDP, which is about ten-fold smaller than the contribution of the U.S. industry to its national GDP. There is considerable opportunity for Canada to take a bigger slice of the global bioscience market and for the domestic health science industry to increase its contribution to the Canadian economy.

Building up the industry in Canada will require concerted action from federal and provincial governments and the healthcare system at large to overcome the biggest long-standing barriers to growth: lack of sufficient capital and suboptimal adoption. If companies were able to mature into larger entities by driving adoption and generating revenue in their home market, then they could anchor the domestic industry and attract more capital to the ecosystem, thus creating a virtuous circle of growth.

OBIO interviewed and surveyed industry leaders on the impact of the pandemic and then asked them to think about the future. To our knowledge, this is the largest survey of the Canadian health science industry conducted in 2020.

Canadian health science industry leaders are weathering the storm and are optimistic about the future. Different types of companies have been affected by the pandemic in different ways: 62% of therapeutic companies and 58% of medical device companies report a negative impact as compared with only 27% of digital health companies. Moreover, 40% of respondents from digital health companies report a positive impact. 18% of all respondents say that their companies have reduced headcount, 60% say headcount has been maintained and 22% report an increase. 27% of respondents from medical device companies and 32% of respondents from digital health companies report increases in headcount, likely reflecting the rapid scaling up by companies of existing products including ventilators and virtual health care approaches in response to the pandemic. Despite all the turmoil of the past several months, 47% of industry leaders are more optimistic about the future of the industry compared to one year ago, whereas 23% are less optimistic. In keeping with previous findings, respondents from digital health companies are the most optimistic with 61% saying they are more optimistic compared to one year ago and only 10% saying they are less optimistic.

Globally, there has been record-high funding for health innovation in 2020 but not in Canada. The cautious attitudes of Canadian venture capitalists contrast with the elevated global (mostly U.S.) venture capital activity reported by Startup Health Insights and underscores the relative paucity of private capital available to health science companies in Canada. 78% of surveyed industry leaders say a health innovation capital fund is the top action that should be prioritized to increase access to capital. Industry support for a health innovation capital fund has grown by 11 percentage points in the past five years. The Government of Canada has not given financial support specifically to the health science industry since the pandemic began. Québec has been the only province to make a specific financial commitment to the health science industry in 2020.

Issues related to adoption and purchasing are of greater concern for companies that are scaling their innovations: 79% of industry leaders from companies with 11 or more employees say that “simplifying procurement processes and facilitating adoption and dissemination of new drugs and technologies throughout the healthcare system” is a top priority (as compared with 65% of respondents at smaller companies). Furthermore, respondents from larger companies make twice as many suggestions related to adoption and purchasing as respondents from smaller companies. There is also more interest in focussing on “cost-reducing factors such as tax credits and incentives” from industry leaders at larger companies as compared with those at smaller companies (53% versus 40% of respondents).

If Canadian health science companies were supported to launch in Canada, then both the country’s population health and economy would benefit. 50% of surveyed industry leaders from pre-revenue companies say they intend to launch a product in Canada after other markets compared to 42% who say Canada will be their first target market. Furthermore, 24% of industry leaders at pre-revenue companies and 15% of respondents at revenue-generating companies say they do not well understand the process to get their product purchased in Canada. These findings suggest there is considerable opportunity to support companies through the approval and procurement process to maximize their chances of success, especially for pre-revenue companies as they plot their first product launches.

To drive adoption, our survey found that 88% of industry leaders think “working with industry to establish a network of early adopter institutions and invest in infrastructure and programming to pilot new drugs and technologies at Ontario institutions” should be prioritized. However, 35% of respondents say that it is more difficult or much more difficult to find a suitable key opinion leader in Canada compared to other markets. These findings suggest that there is opportunity to broker partnerships between early-stage companies and key opinion leaders in Canada to champion innovative products in the domestic healthcare system.

88% of industry leaders think “working with industry to establish a network of early adopter institutions and invest in infrastructure and programming to pilot new drugs and technologies at Ontario institutions” should be prioritized to improve market access. OBIO launched its Early Adopter Health Network (EAHN™) in 2020 to evaluate an initial eight novel technologies. Based on the survey results, there is opportunity to expand the program to include therapeutics.

If the twin challenges of capital attraction and driving adoption are addressed, Canada has the potential to become a global leader of innovation and production in healthcare.

Recommendations

Federal and provincial governments should explore how to create a health innovation capital fund dedicated to supporting Canadian health science companies.

Federal and provincial governments should examine how to create new tax credits to attract additional investment in companies scaling up their products and traversing the so-called “valley of death”.

Institutional investors should develop strategies to invest in Canadian health science companies and develop fund managers with specialized knowledge.

Healthcare providers should see themselves as part of the innovation ecosystem and co-create value by partnering with health science companies.

OBIO should evaluate the impact of its new Early Adopter Health Network (EAHN™) and seek opportunities to scale and spread the program to include therapeutic evaluations.

Federal and provincial governments should increase their support for companies during the approval and procurement process to maximize their chances of success, especially for pre-revenue companies scaling their innovations as they plot their first product launches.

Introduction

The ongoing Covid-19 pandemic has caused huge social and economic disruption across the world and the International Monetary Fund describes it as the “worst economic downturn since the Great Depression”¹. In Canada, real gross domestic product (GDP) fell by 11.5% in the second quarter of 2020, which is the biggest drop since Statistics Canada began publishing quarterly data in 1961².

The health science industry has taken centre stage in the response to the pandemic by developing tools to identify the novel coronavirus SARS-CoV-2 and developing products to diagnose, treat, mitigate or prevent the spread of Covid-19. Many experts have linked global economic recovery to the timely development of effective diagnostic tests, vaccines, and therapies that could be used in combination to control Covid-19 and enable lockdown measures and social restrictions to be lifted.

The public has a renewed appreciation of the health science industry, and the connection between health and wealth at the societal level has been underscored by the pandemic. The industry has been able to harness substantial advances in biological science and technology to make rapid progress in the fight against Covid-19 – for example, sequencing the virus’ genome in only a matter of weeks. Companies have shown unprecedented levels of mobilization and an ability to pivot quickly to address the challenges of the pandemic.

Beyond the resolution of the pandemic itself, the health science industry has the opportunity to become a pillar of the economy in the long term. Many segments of the economy such as capital goods, transportation and aerospace may take years to recover to pre-pandemic revenue levels whereas analysts predict the healthcare industry will recover in less than a year³.

Long term, the bioscience sector has the potential to create value by addressing all aspects of human health. McKinsey estimates that the cost of ill health was more than US\$12 trillion in 2017 (about 15% of global real GDP) and that an investment in health could boost annual global GDP by 8% in the economy of 2040⁴. There is also growing recognition that climate change will increase the likelihood of future pandemics and that a strong bioscience sector is needed.

The health and biosciences industry contributed CA\$7.8 billion to Canada's GDP in 2016, representing 0.45% of the total⁵. By comparison, the U.S. pharmaceutical and medical-instrument subsectors’ combined output was US\$675 billion in 2015, almost 4% of total GDP⁶. There is considerable opportunity for Canada to take a bigger slice of the global bioscience market and for the domestic health science industry to increase its contribution to the Canadian economy. Building up the industry in Canada will require concerted action from federal and provincial governments and the healthcare system at large. In this study, we explore the barriers to growth and opportunities to build on Canada’s strengths.

¹ The Great Lockdown: Worst Economic Downturn Since the Great Depression. International Monetary Fund; April 14, 2020.

² Canada’s economy sees record quarterly slump; June gains suggest early COVID-19 efforts ‘paying off’. Globe & Mail; August 28, 2020.

³ Covid-19 Investment Implications Series: The World After Covid Primer. Bank of America Global Research; May 2020.

⁴ Prioritizing health: A prescription for prosperity. McKinsey Global Institute; July 8, 2020.

⁵ Health and Biosciences Interim Report. Health and Biosciences Economic Strategy Table; 2018.

⁶ How to Ensure That America’s Life-Sciences Sector Remains Globally Competitive. Information Technology & Innovation Foundation; 2018.

Study Objectives

Since 2009, the Ontario Bioscience Innovation Organization (OBIO) has consistently consulted with industry and has developed and delivered programs and policy recommendations to help address stability, growth and competitiveness. OBIO commissioned this study to identify issues and develop recommendations that will accelerate the development of Canada's health science industry into an economic driver of the post-pandemic economy.

Methods

OBIO identified selected Canadian industry leaders as key informants to be interviewed to gather qualitative feedback on the current state of the industry and to make suggestions for future directions for economic recovery. The themes that emerged from the interviews were used to construct surveys enabling quantitative insights from a wider group of industry leaders. The primary research was complemented by an environmental scan of programs and interventions available in other jurisdictions.

Profile of Respondents

Response Rates

Five key informants from British Columbia, Ontario and Québec, all of whom are either the CEO or President of their companies, were interviewed in late July 2020. OBIO invited 655 industry leaders (representing 513 unique companies) from its contact database to complete a survey about their experiences of the pandemic and suggestions for strengthening the industry between August 12th and September 1st, 2020. The survey was completed by 208 respondents (from 176 unique companies), which is a response rate of 32%.

Demographics of Respondents

Ninety percent of the survey respondents are based in Ontario, which reflects the composition of OBIO's contact database. Other provinces represented include Alberta (4%) Québec (4%), British Columbia (1%) and Nova Scotia (1%). OBIO has consulted companies across Canada to ascertain their views in recent years; at the OBIO Investment Summit in February 2020, 49% of the companies were from outside of Ontario.

Sixty-three percent of respondents hold the title of Founder, CEO or President and a further 26% are at the executive level.

Employers of Respondents

Ninety-five percent of respondents are employed by companies that are headquartered in Canada with the United States being the most frequent "other" response.

The most frequent employers of industry leaders are companies focused on medical devices (34%), therapeutics (28%) or digital health (16%); the "other" category in the table below includes companies in the service category or other organizations such as consulting firms.

Most of the respondents are working at early-stage companies: 68% are employed by companies with headcounts of 10 or fewer employees and 63% are in companies at the pre-revenue stage. Across all companies, there is a wide range of investment secured: 32% of respondents work for companies that have secured under \$500,000 whereas 21% work for companies that have secured over \$10 million.

Characteristics of Companies Employing Survey Respondents*	
<i>Type</i>	
Medical device	34%
Therapeutic	28%
Digital health	16%
Diagnostics	11%
Research tools	5%
Nutritional health	1%
Direct to consumer	1%
Other	4%
<i>Headcount</i>	
Less than 5	32%
5-10	36%
11-50	21%
More than 50	10%
<i>Revenue</i>	
Pre-revenue	63%
Under \$10M	29%
\$10M to \$24.9M	3%
\$25M to \$50M	1%
Over \$50M	4%
<i>Investment Secured</i>	
Under \$500,000	32%
\$500,000 to \$999,999	11%
\$1,000,000 to \$1,999,999	15%
\$2,000,000 to \$4,999,999	12%
\$5,000,000 to \$10,000,000	10%
Over \$10,000,000	21%
*Percentages may not total 100 due to rounding	

Sub-group analysis of the three most common types of company is displayed in the table below and shows that 73% of therapeutic companies are pre-revenue, which is higher than the proportions of pre-revenue medical device and digital health companies, which are 67% and 42%, respectively. In terms of headcount, 37% of medical device companies have 11 or more employees compared to only 29% of therapeutic and 26% of digital health companies.

Headcount and Revenue Status of Types of Companies Employing Survey Respondents*			
Type	Headcount		
	Fewer than 5 employees	5-10 employees	11 or more employees
Therapeutic	30%	41%	29%
Medical device	21%	42%	37%
Digital health	39%	35%	26%
Type	Revenue Status		
	Pre-Revenue	Revenue	
Therapeutic	73%	27%	
Medical device	67%	33%	
Digital health	42%	58%	
*Percentages may not total 100 due to rounding			

When companies are stratified by their revenue status, as shown in the table below, we see that only 20% of pre-revenue companies have at least 11 employees compared to 50% of companies that generate revenue.

Headcount of Pre-Revenue & Revenue-Generating Companies Employing Survey Respondents*			
Revenue Status	Headcount		
	Fewer than 5 employees	5-10 employees	11 or more employees
Pre-Revenue	41%	39%	20%
Revenue	18%	32%	50%
*Percentages may not total 100 due to rounding			

When companies are stratified by their headcount, as shown in the table below, we see that only 20% of companies with fewer than five employees generate revenue while 95% of companies with more than 50 employees have revenue.

Type & Revenue Status of Different Sized Companies Employing Survey Respondents*			
Headcount	Type		
	Therapeutic	Medical device	Digital health
Fewer than 5 employees	27%	22%	19%
5-10 employees	32%	38%	15%
11-50 employees	23%	42%	9%
More than 50 employees	29%	33%	19%
Type	Revenue Status		
	Pre-Revenue	Revenue	
Fewer than 5 employees	80%	20%	
5-10 employees	68%	32%	
11-50 employees	59%	41%	
More than 50 employees	5%	95%	
*Percentages may not total 100 due to rounding			

Pre-Pandemic State of the Canadian Health Science Industry

Following the decline of traditional manufacturing in recent decades, federal and provincial governments have shown an interest in growing the Canadian health science industry to boost the economy. Industry leaders have welcomed greater government support and OBIO was founded in 2009 to collectively advocate for its members.

As described in the introduction to this report, the health and biosciences industry contributes only 0.45% to Canada's total GDP, which is about ten-fold smaller than the contribution of the U.S. industry to its national GDP. The profile of respondents to our survey shows that the industry in Ontario is characterized by small, early-stage entities in contrast to the multinational corporations headquartered in the United States. Unfortunately, many early-stage Canadian companies fail to pass through the so-called "valley of death", which is a critical phase between piloting their products and early adoption. This is the stage in which entrepreneurs must demonstrate revenue potential in order to attract investment that will enable them to scale their innovations.

Several of the key informants interviewed for this study described how having large, established companies would benefit the entire health science ecosystem in Canada. As one says, "The whole industry in Canada is still in its early stages so we need a few more big wins and those beneficiaries of that big win to then invest in other companies and I feel like we're not quite at critical mass. We are just on the edge of it. If you look at the history of entrepreneurship across the industry, you see that the people who are successful entrepreneurs almost never start as entrepreneurs, they learn their trade within a company and then they branch out at some point. They get someone else to pay them to learn basically and our problem is that Canada has been a branch plant in the industry. For all the core head office functions, where do you learn how to do all that stuff? That's kind of what a start-up needs more than anything. It's figuring out the right product more so than figuring out what your distribution strategy in Saskatchewan is going to be. So how do you crack that nut? Somehow, you've got to have against all odds a few companies that are successful at doing that and then they start spawning other start-ups."

Lack of access to capital has long been recognized as the biggest barrier to growth of the Canadian health science industry. OBIO surveyed industry leaders in 2015 and 86% of the small and medium-sized enterprises (SMEs) said access to appropriate capital for the company's needs was a major barrier to scale up⁷.

All key informants interviewed for this study bemoan the difficulty of raising money. As one industry leader says, "The amount of investment capital is insufficient in Canada compared to the United States and good companies are dying because they're not being able to successfully cross that chasm to get their first series A round or survive in order to demonstrate that their technology can succeed." Another says, "I think we're dismal compared to other countries. Several times we've been told by large investors that if we just moved to Silicon Valley or Minneapolis or Boston, we just wouldn't have funding challenges. It's just so numerous. It's kind of heartbreaking."

Several provincial governments have established venture capital funds to support technology companies in their provinces including the Ontario Capital Growth Corporation (established in 2009) and the BC Tech Fund (launched in 2016) but health science companies have not received dedicated funding allocations.

In the years preceding the pandemic, various organizations proposed strategies for supporting companies to reach the critical mass needed to be able to benefit the rest of the sector and steady progress was being made by federal and provincial governments and by industry advocates including BioteCanada and OBIO.

⁷ How Canada should be Engaging in a \$9 Trillion Dollar Health Economy? Industry Engagement & Perspectives Report. Ontario Bioscience Innovation Organization; 2016.

In January 2017, OBIO hosted a leadership summit with over 50 industry executives; academic, health system and government leaders; and global investors in attendance, actively committed to growing domestic health science companies that can serve a global market. Under OBIO's leadership, they devised a plan to tackle three major challenges that limit sector growth⁸:

1. Innovation pull: accelerating the commercialization of novel intellectual property (IP) from research institutions
2. Driving adoption: working directly with Ontario health providers to deliver novel solutions for optimal healthcare
3. Capital attraction: attracting and rewarding global investment in innovative companies

As part of the plan, OBIO has continued to develop several successful programs to increase access to capital including the Capital Access Advisory Program (CAAP™), Mentoring, Investors, Networking, Targeted Advice for health science companies (HealthMINT™) and an annual OBIO Investment Summit to facilitate deals between investors and companies. OBIO's newest program – the Early Adopter Health Network (EAHN™) focuses on driving adoption.

In the past three years, both the Government of Canada and the Government of Ontario have introduced initiatives to support the creation of IP and thus address the challenge of innovation pull. In April 2018, the Government of Canada launched its Intellectual Property Strategy and committed to investing \$83.5 million over five years to raise awareness of IP; provide education, advice and strategic IP tools; and develop IP legislation⁹. In February 2020, the Government of Ontario's Expert Panel on Intellectual Property released its recommendations on how to help generate, commercialize and protect IP in Ontario postsecondary and research institutions and organizations. The report was followed in July by the province's first Intellectual Property Action Plan to strengthen IP literacy by developing standardized, digital basic and advanced IP education curriculums; and to create a centralized provincial resource to increase access to IP legal expertise and educational resources everywhere in the province¹⁰.

Despite recent progress on engendering innovation pull, there has been no significant government intervention to attract capital and drive adoption in the health science sector. The two barriers to growth are intertwined: although there is a burgeoning start-up scene, early-stage companies are often unable to access the capital they need to get to the next level and many are acquired by foreign companies, which represents a net loss to the Canadian economy. If companies were able to mature into larger entities by driving adoption and generating revenue in their home market, then they could anchor the domestic industry and attract more capital to the ecosystem, thus creating a virtuous circle of growth.

In 2017, The Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development (now Minister of Innovation, Science and Industry) convened a series of Economic Strategy Tables to make recommendations on how to drive innovation-led long-term growth of the Canadian economy. Six industry sectors were represented: advanced manufacturing, agri-food, clean technology, digital industries, health & biosciences and resources of the future. The Health & Biosciences Table released its interim report in February 2018 and identified four priority themes¹¹:

1. Increasing access to capital and growing Canadian firms
2. Enabling innovative procurement, technology adoption and commercialization

⁸ Tackling the Anchor Company Challenge. Ontario Bioscience Innovation Organization; 2017.

⁹ Government of Canada launches Intellectual Property Strategy. Innovation, Science and Economic Development Canada; April 26, 2018.

¹⁰ Province Launches Intellectual Property Action Plan. Government of Ontario; July 17, 2020

¹¹ Health and Biosciences; Interim Report. Health and Biosciences Economic Strategy Table; 2018.

3. Strengthening the health system with technology
4. Ensuring the right skills and talent are available

The top two challenges underscore the need to support the industry in attracting capital and driving adoption. However, the federal government did not implement any changes specifically for the health science industry in the two years following the interim report, leaving Canadian companies to continue to compete for funding from the Strategic Innovation Fund and Regional Development Agencies and to navigate the maze of regulations and approvals needed for product adoption in Canada's fragmented healthcare system.

Also in 2018, the Government of Canada initiated Innovative Solutions Canada, a procurement program with over CA\$100 million dedicated to supporting the scale-up and growth of Canada's innovators and entrepreneurs by having the federal government act as a first customer. It is modelled after the U.S. Small Business Innovation Research Program (SIBR), which was created in 1982 and has an annual budget of over US\$3 billion, which is considerably larger. Innovative Solutions Canada grew out of the former Build in Canada Innovation Program (BCIP), which is now the testing stream of the new program. The success of the procurement arm of the program will depend on the ability of prospective buyers to obtain medical device licences. Currently, such licences are held at the provincial level rather than the federal level so the relevance of Innovative Solutions Canada to the health science industry is unclear.

Since 2017, OBIO has organized and hosted the Health to Business Bridge (H2BB™) program to prepare early career professionals to transition into industry and to be the new leaders in industry. As of September 2020, over 140 participants have taken part in the program. Over 65% of past participants secured employment in the health science industry and over 50% continue to be employed in the industry.

Response to the Pandemic

Governments across the Group of Twenty (G20) economies provided support to their citizens in response to the pandemic through revenue and spending measures of 3.5% of GDP on average. In addition, massive packages of public-sector liquidity support, including loans and guarantees, each above 10% of GDP in France, Germany, Italy, Japan and the United Kingdom, were announced to support financial and nonfinancial firms, including SMEs. A few G20 governments allocated resources to develop vaccines and ramped up production of medical supplies and testing kits, notably Germany, Japan, Spain and the United States; Germany allocated €1.1 billion for the development of vaccines and medicines¹².

In Canada, the federal government introduced a suite of measures to support individuals and businesses, including:

- Regional Relief Recovery Fund
- BDC Capital Bridge Financing Program
- Business Credit Availability Program (BCAP) – BDC and EDC loans
- Canada Emergency Business Account (CEBA)
- Canada Emergency Wage Subsidy (CEWS)
- Temporary 10% Wage Subsidy
- Canada Emergency Commercial Rent Assistance (CECRA)
- Canada Emergency Response Benefit (CERB)

¹² Fiscal Monitor. International Monetary Fund; April 2020.

- Tax deferrals on GST and HST
- IRAP Innovation Assistance Program

Several of the new initiatives were originally intended to last for a few months and many pre-revenue companies were initially ineligible for some programs but the persistence of Covid-19 and the deepening recession led to broadening of the eligibility criteria. Later in September 2020, the federal government used the Speech from the Throne to announce its intention to extend many of the emergency supports well into 2021 including BCAP, CEBA and CEWS.

Unlike administrations in some other countries, the Government of Canada has not given financial support specifically to the health science industry. Nevertheless, the federal and provincial governments did offer regulatory support to innovators tackling Covid-19 so that promising diagnostics, medical devices, vaccines and therapies could be fast-tracked for approval and adoption. Since the pandemic began, Québec has been the only province to make a specific commitment to the health science industry. In June 2020, the Québec government, through Investissement Québec, and Fonds de solidarité FTQ, announced that it will set up a co-investment envelope of CA\$150 million over five years to support the growth of Québec's life sciences sector, in response to a direct request from industry players.

Also in June 2020, Minister Bains announced a new Industry Strategy Council to drive the economic recovery following the pandemic and the council includes the chair of the Health & Biosciences Table. It may be that specific supports for the health science industry will emerge from the new council in time.

Canadian health science companies have risen to the challenge of the pandemic: 5% of companies developing vaccines or therapies for Covid-19 are headquartered in Canada and 7% of medical device and diagnostics companies developing solutions for Covid-19 are Canadian led. Although these percentages are small, only 3% of all therapeutic companies and 4% of all medical device and diagnostics companies are Canadian¹³. Notable efforts by Canadian companies include vaccine development by Laurent Pharmaceuticals, IMV and Medicago while Bausch Health initiated clinical trials of its respiratory tract infection treatment Virazole on Covid-19 patients in Canada. In addition, VBI Vaccines, although now headquartered in the United States, has a research facility in Ottawa and is collaborating with the National Research Council of Canada on a "pan-coronavirus" vaccine, which would target COVID-19 as well as SARS and Middle East respiratory syndrome, or MERS. Health Canada promptly granted companies approval to begin clinical trials under an expedited review process introduced to tackle Covid-19.

However, one interviewed key informant thinks that many more Canadian companies could be mobilizing in response to the pandemic and says, "I'm not sure I can say the Canadian industry has got their act together to participate in what is going to be a global surge in medical technologies. If we don't, we'll be a smaller part of an increasingly larger pie."

While Canadian health science industry leaders have welcomed increased interest and support from government, some of them report that the emergency response to the pandemic undermined long-term prospects for the sector. After the pandemic began, some funding programs were paused while new measures such as the Regional Relief and Recovery Fund were implemented. This left some companies in a difficult position, as described by one interviewed industry leader who says, "Ahead of the pandemic we were making good progress on some big infrastructure grants with the Strategic Innovation Fund

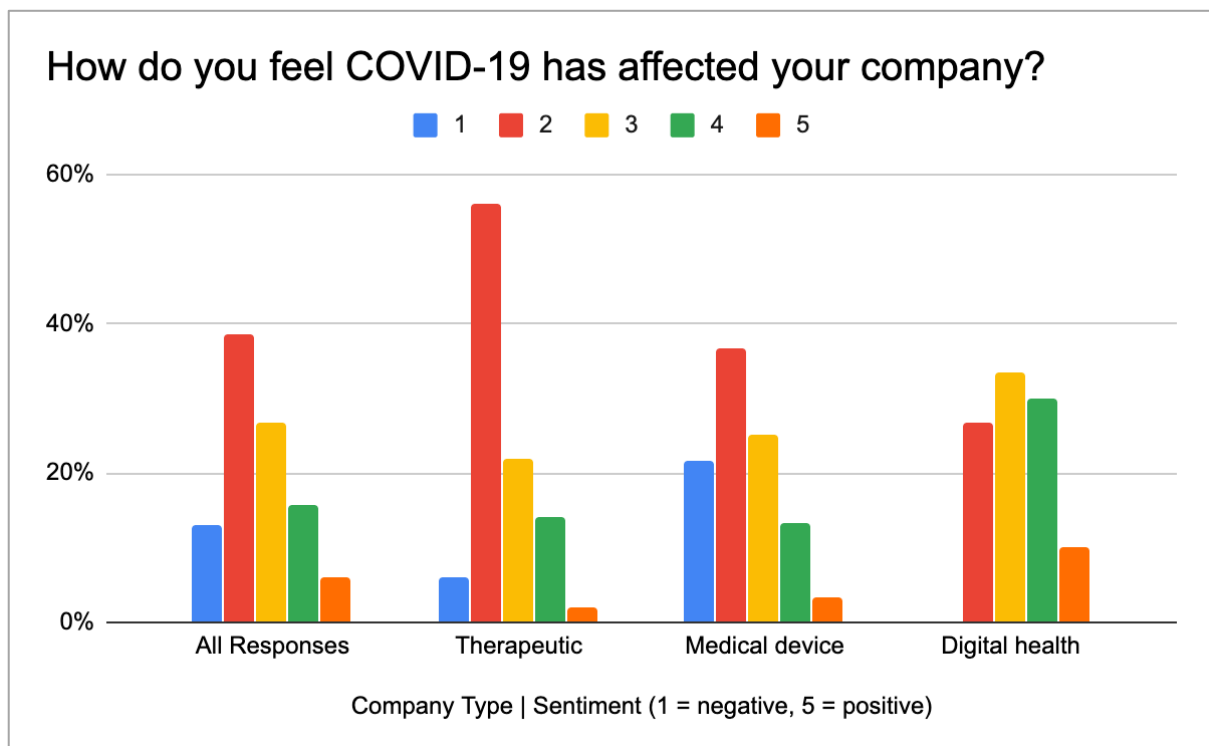
¹³ Analysis of data available in GlobalData's Pharma Intelligence Center on September 22, 2020.

and FedDev that would help us manufacture *en masse* in Canada. And then all of a sudden, with this pandemic, we've been totally left in the lurch. It's hard to get that government focus on these big issues at times like this. I know they want to help out, but they've got to look across their silos and figure out how to help companies. I feel like there's just been this paralysis that's happened.”

Impact of the Pandemic on the Canadian Health Science Industry

Industry Leaders are Weathering the Storm and are Optimistic for the Future

Respondents were initially asked how they feel Covid-19 has affected their company on a five-point scale, with 1 being most negative and 5 being most positive. As shown in the figure below, 52% of all respondents selected 1 or 2 to indicate that Covid-19 has negatively affected their company whereas 22% of respondents selected 4 or 5 to indicate Covid-19 has positively affected their company. However, industry leaders from different types of companies have different perspectives: 62% of respondents from therapeutic companies and 58% of respondents from medical device companies report a negative impact as compared with only 27% of respondents from digital health companies. Moreover, 40% of respondents from digital health companies report a positive impact. These findings likely reflect the different experiences of different types of companies during the pandemic: therapeutic companies were hardest hit due to clinical trials being disrupted whereas the rapid uptake of virtual care approaches boosted digital health companies.

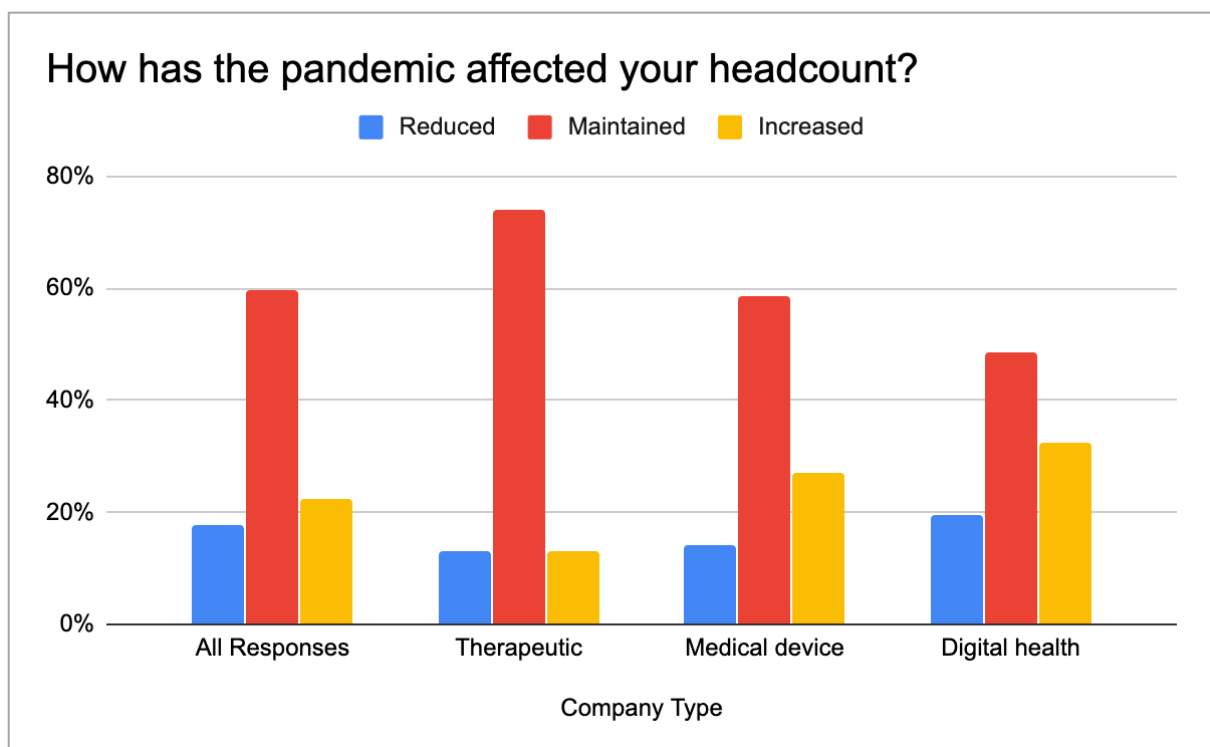


The sentiments of respondents were also stratified by company size and revenue status. There was no significant difference between respondents from different size companies (see Figure S1 in the Appendix); or between respondents from pre-revenue companies versus companies generating revenue (see Figure S2 in the Appendix).

Industry leaders were asked specifically about the effects of the pandemic on their number of employees. As shown in the figure below, 18% of all respondents say that their

companies have reduced headcount, 60% say headcount has been maintained and 22% report an increase. Twenty-seven percent of respondents from medical device companies and 32% of respondents from digital health companies report increases in headcount. These findings probably reflect the rapid scaling up by companies of existing products including ventilators and virtual health care approaches.

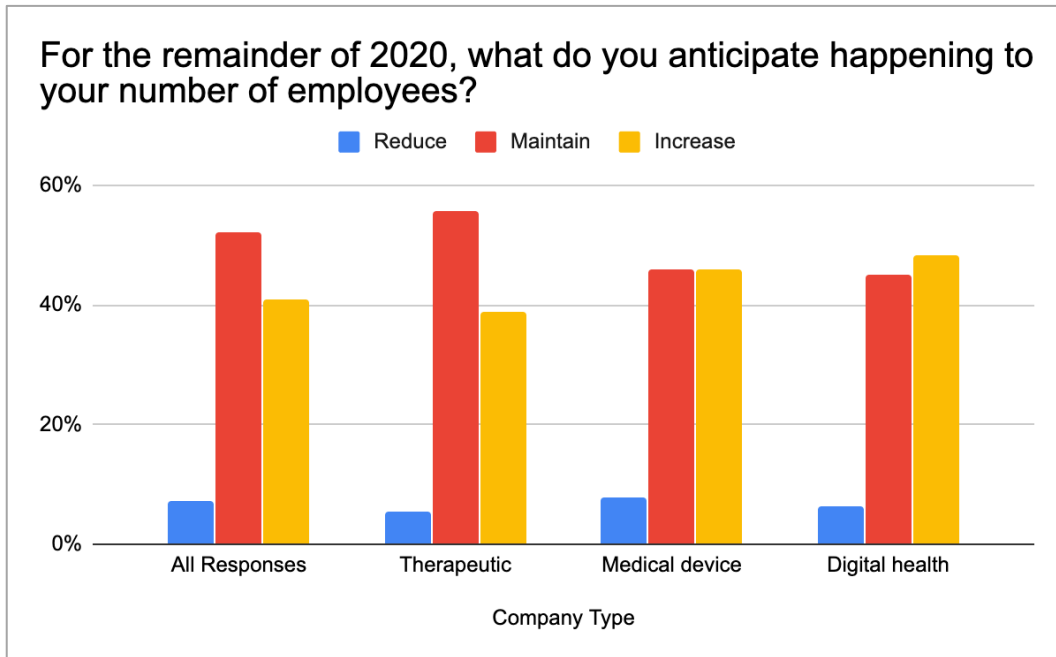
Interviewed key informants say the supports introduced by the federal government were essential for maintaining headcounts at early-stage companies. One industry leader says, “I know that several other entrepreneurs that I associate with felt like CERB was critical for them getting over the hump so they wouldn't lose critical staff at a vulnerable time.” Another says, “You've got to hunker down and reduce your burn as much as possible and we've done that, but we've also been able to keep all of our people employed largely because of these programs.”



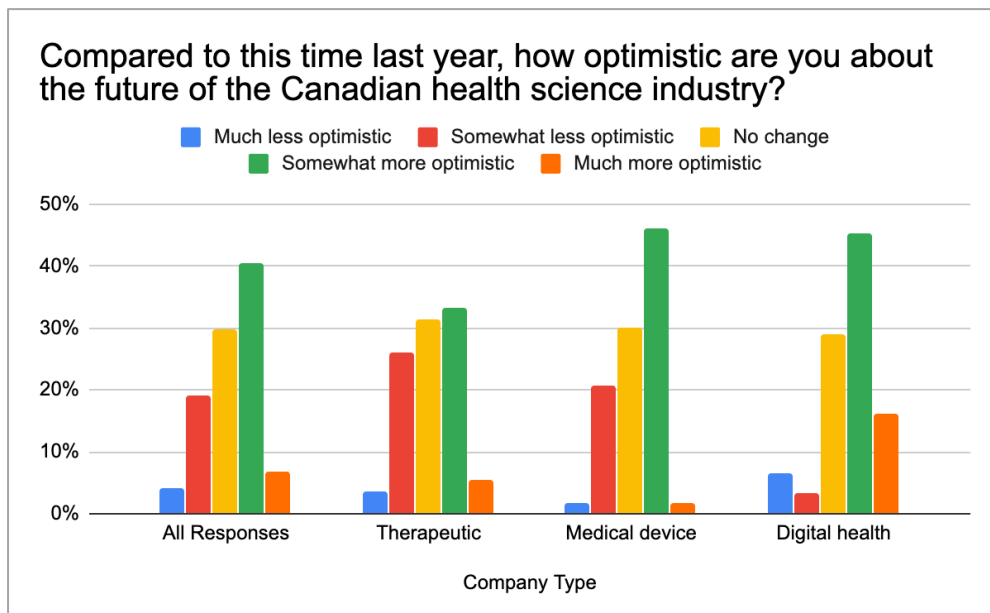
More established companies have also increased headcount with 33% of industry leaders from companies with 11 or more employees saying headcount has increased and 28% of respondents from companies with revenue saying headcount has increased (see Figure S3 and Figure S4 in the Appendix). This finding may point to the resilience of more mature companies and the vulnerability of early-stage companies who do not have revenue streams to mitigate the disruption to their business.

Looking ahead, the majority of industry leaders expect to maintain (52%) or increase (41%) their number of employees for the remainder of 2020, as shown in the figure below; respondents from medical device and digital health companies are more likely to predict increasing than maintaining numbers. There is no significant difference if the responses are stratified by company headcount or revenue status (see Figure S5 and Figure S6 in the Appendix). It is encouraging that only 7% of industry leaders expect to decrease their number of employees for the rest of this year. In early September, The Logic found that 19% of its subscribers were considering layoffs or staff reductions knowing that the CEWS was

due to end in December 2020¹⁴. Later in September, during Speech from the Throne, the federal government has announced its intention to continue CEWS until Summer 2021.



Despite all the turmoil of the past six months, our survey finds that 47% of industry leaders are somewhat more or much more optimistic about the future of the industry compared to one year ago, whereas 23% are somewhat less or much less optimistic. In keeping with previous findings, respondents from digital health companies are the most optimistic with 61% saying they are somewhat more or much more optimistic compared to one year ago and only 10% saying they are somewhat less or much less optimistic, as shown in the figure below. There is no significant difference if the responses are stratified by company headcount or revenue status (see Figure S7 and Figure S8 in the Appendix).



¹⁴ Subscribers divided over business outlook after CEWS, survey finds. The Logic; September 4, 2020.

As one interviewed industry leader says, “I’m even more optimistic about the future of healthcare and healthcare devices. I think there’s going to be a huge awareness that globally this is an increasingly important area to invest in.”

Our findings are in agreement with KPMG’s survey of global CEOs across all industries, which found that only 12% of Canadian CEOs are significantly or moderately less confident than they were in January, compared to 29% globally. Furthermore, 40% of Canadian CEOs remain as confident as they did pre-pandemic, versus only 26% of global CEOs¹⁵.

Private Investors Have Flocked to Health Science Start-Ups... But Not in Canada

Typically, stocks in health science companies out-perform the market in a recession and globally there has been a lot of interest in investing in the sector. Bank of America surveyed its Global Research analysts in May 2020 and 75% said healthcare (including biopharma, biotech, life sciences tools, diagnostics, medtech, healthtech and healthcare distributors & services) would be a big winner in the wake of the pandemic, second only to the technology sector, which was identified as a winner by 85% of analysts¹⁶. The S&P 500 pharmaceuticals, biotech and life sciences index has outperformed the broader S&P 500 index this year, and the Nasdaq biotech index has done the same¹⁷.

Globally, there has been an increase in venture capital and private equity funding of health science start-up companies. Startup Health Insights reports that total health innovation funding for the first half of 2020 reached US\$9.1 billion, representing an increase of 19% compared to the same period in 2019. Although funding dropped to a low of US\$1 billion in April following the declaration of the pandemic in late March, funding activity resumed in May and across all segments of the health science industry, indicating investors’ interest in supporting long-term growth in the sector. Startup Health Insights also found that Toronto was second only to London (outside the United States) in the number of deals closed in the first half of 2020. Nevertheless, the number of recent deals in Toronto (10) is small compared to the number in San Francisco (68), New York City (49) and Boston (24)¹⁸. PitchBook Data, Inc. reports that by the end of the third quarter of 2020, U.S. venture capitalists had made US\$19.5 billion in deals in pharma & biotech, as compared with US\$17.4 billion for the whole of 2019 and that there was a notable increase in late-stage VC funding¹⁹.

The finding that venture capital and private equity funds paused the deals that were in play when the pandemic began matches our survey findings, as shown in the figure below. The majority of industry leaders report that negotiations for new investment have either stopped or been have been delayed. Across all companies, 46% of respondents say that negotiations for new investment have been delayed and 14% say they have stopped.

Nevertheless, there are differences across the Canadian ecosystem with 31% of respondents from therapeutic companies saying the pandemic has not affected their ability to raise capital and (as compared with 19% of all respondents) and 13% of respondents from digital health companies saying the pandemic has accelerated negotiations for new investment (as compared with 6% of all respondents).

¹⁵ KPMG 2020 CEO Outlook, COVID-19 edition. KPMG; August 31, 2020.

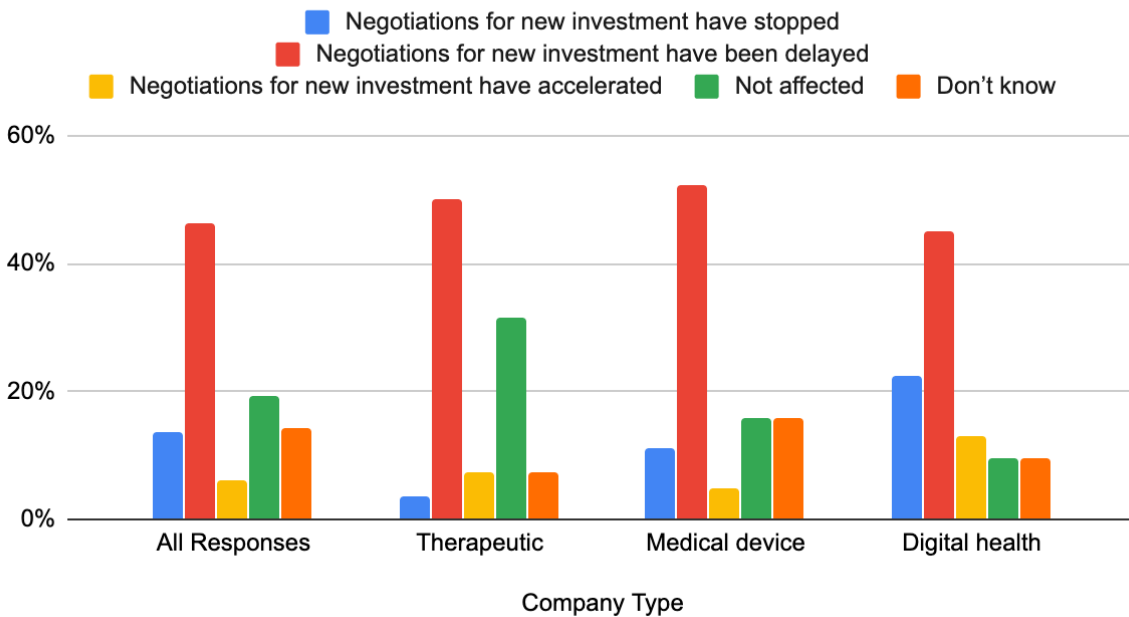
¹⁶ Covid-19 Investment Implications Series: The World After Covid Primer. Bank of America Global Research; May 2020.

¹⁷ Pharma industry seizes on pandemic as a shot at redemption. Financial Times; July 5, 2020.

¹⁸ 2020 Midyear Report. Startup Health Insights; July 2020.

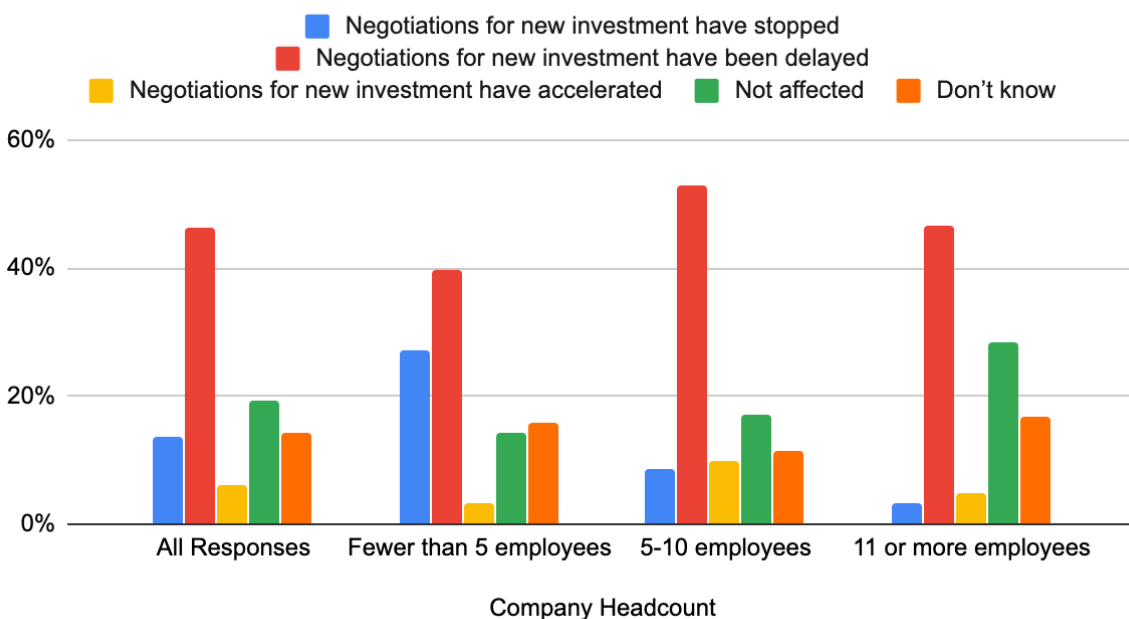
¹⁹ Q3 2020 Pitchbook-Nvca Venture Monitor; October 2020.

How has the pandemic affected your ability to raise capital?



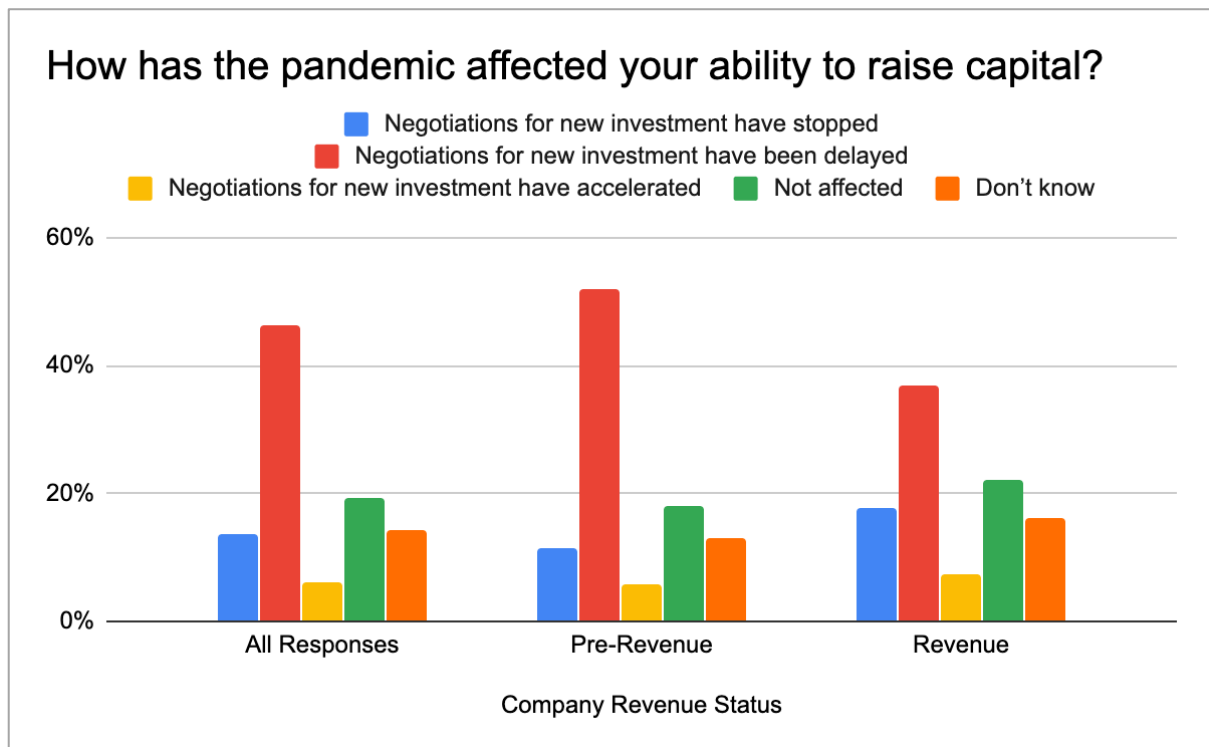
Smaller companies also appear to have been disproportionately affected by the increased caution of investors. Twenty-seven percent of respondents at companies with fewer than 5 employees report that negotiations for new investment have stopped compared with only 3% of respondents at companies with 11 or more employees. Furthermore, 28% of industry leaders at companies with a headcount of at least 11 say the pandemic has not affected their ability to raise capital.

How has the pandemic affected your ability to raise capital?



Surprisingly, 18% of respondents at companies that generate revenue say that negotiations for new investment have stopped compared to only 11% of pre-revenue companies; and

only 37% of revenue-generating companies say that negotiations have been delayed compared to 52% of pre-revenue companies.



We surveyed industry leaders about their perceptions of whether different funders have been more or less likely to invest since the pandemic began. The survey included ten different funders, some of which are well-known to the bioscience industry (e.g. government programs) and some which have seldom invested in health science companies (e.g. pension funds). Depending on the type of funder, 17-70% of respondents don't know or are unable to comment about the willingness to invest of different funders.

Government grants (including regional funding programs, IRAP, NRC, BDC) is the only funding source that a significant proportion of industry leaders (47%) think is more willing to invest since the pandemic began. Forty percent of respondents say angel investors and venture capital are less willing to invest since the pandemic began. Industry leaders working for pre-revenue companies have similar perceptions to all respondents (see Figure S9 in the Appendix).

The respondents' perception that more investment from government grants and loans is available reflects the new measures that the federal and provincial governments have introduced since the start of the pandemic.

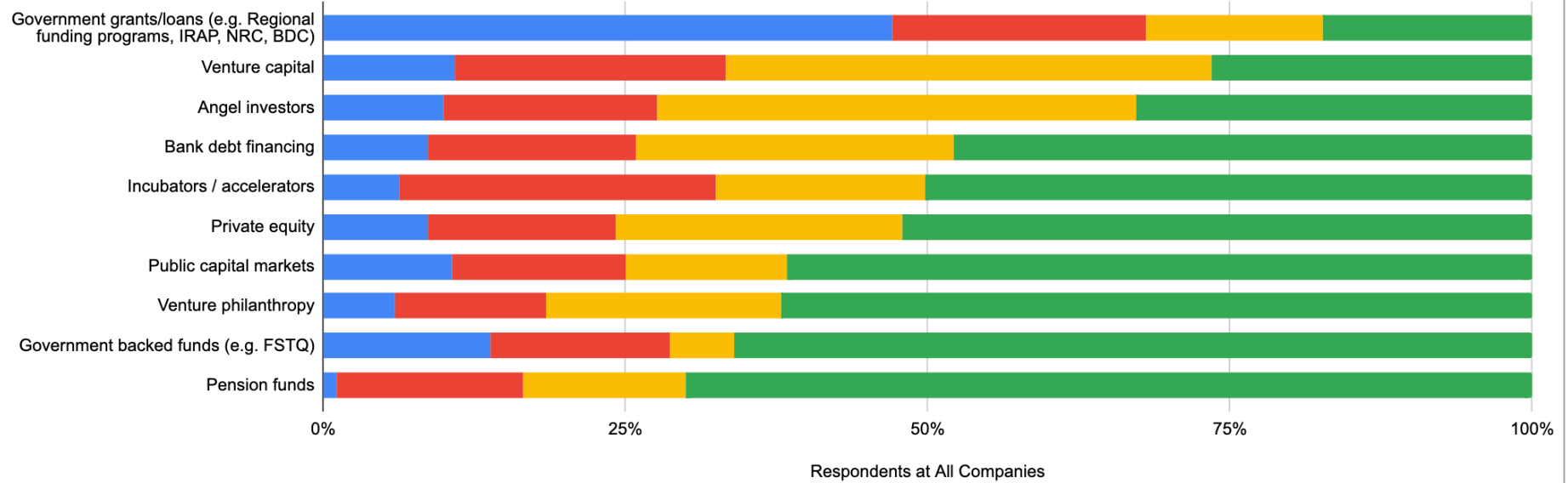
The perception that angel investors and venture capital are less willing to invest is in agreement with reports from other analysts of the Canadian innovation economy. In March 2020, The Logic reported that some of Canada's most active venture capital firms planned to slow down early-stage funding and focus on companies already in their investment portfolios²⁰.

The cautious attitudes of Canadian venture capitalists contrast with the elevated global (mostly U.S.) venture capital activity reported by Startup Health Insights and underscores the relative paucity of private capital available to health science companies in Canada.

²⁰ Canada's VCs anticipate a drop in early-stage startup funding. The Logic; Mar 27, 2020.

Please review the sources of funding listed below and indicate your perception of their willingness to invest

■ More willing to invest since pandemic
 ■ No change
 ■ Less willing to invest since pandemic
 ■ Don't know / unable to comment



Growing the Canadian Health Science Industry

Canada: Stable and Talented

We asked key informants how Canada can differentiate itself on a global stage as an attractive place to invest and develop novel healthcare products. They all cite the political stability of Canada and the talent of its innovators.

One industry leader says, “We have sensible government. I think that is honestly quite a big deal. We have good education, we are peaceful. There are so many great things about Canada. We've got access to the U.S. market. We're ideally positioned in a lot of ways.”

Another says, “I think we have probably some of the best technical people on the planet and some of the best physicians and that marriage of the two creates sparks of innovation.”

And another one says, “Canada is still fairly unique in the world as a place of safety, rule of law, orderly government, good government compared to, say, the United States and the United Kingdom. Having stability and civility and generally good quality of living – all these things are huge in the minds of people as they see what's going on around the world. Our government did a good job with the pandemic versus what's happening in the United States. I think all of these things are huge advantages, especially when accentuated by the pandemic.”

Since 2017, OBIO has organized and hosted the Health to Business Bridge (H2BB™) program to prepare early career professionals to transition into industry and to be the new leaders in industry. As of September 2020, over 140 participants have taken part in the program. Over 65% of past participants secured employment in the health science industry and over 50% continue to be employed in the industry.

Access to Capital and Driving Adoption Remain Top Priorities

In recent years OBIO, the Government of Canada's Health and Biosciences Table and other experts have all emphasized that increasing access to capital and driving adoption of products are key to unlocking the potential of the Canadian health science industry. Given that the pandemic has caused unprecedented levels of disruption, we interviewed key informants and surveyed industry leaders to understand how access to capital and adoption could be maximized in the future.

One interviewed industry leader explains how more capital would help create a critical mass of Canadian companies: “Getting a sustained industry post-Covid is about having scaled-up companies that can achieve profitability. I think that that is such a key threshold so that these companies are no longer out there looking for investment. They can be the ones investing in the ecosystem and co-investing with other companies. It is all these large anchor tenant companies like Siemens, GE and Medtronic that have very active big venture groups that continue to help feed the ecosystem. It's not only a source of jobs. It's a source of talent. It's a source of exports but it's also as they become profitable, a source of investment that could go alongside potential government investment programs if the VC community is not helping.”

Overall, 83% of surveyed industry leaders say “access to financing” should be a top area for focused action to speed up opportunities for health science companies to succeed; 68% of respondents rate it as the most important area. Forty-four percent of respondents say “cost-reducing factors such as tax credits and incentives” should be a top area for focused action and 41% of respondents say the “entrepreneurial environment and potential for building R&D partnerships” should be a top area for focused action. About a quarter of respondents also place “integration of the healthcare delivery sector and its efficiency”, “regulatory & clinical trials environment” and “accessibility of commercialization infrastructure at a reasonable

cost” in their top three priorities. Respondents did not rate “IP commercialization”, “manufacturing capabilities”, “privacy and data protection”, “securing visas or work permits for potential employees” or “supply chain and distribution” as high priorities for action.

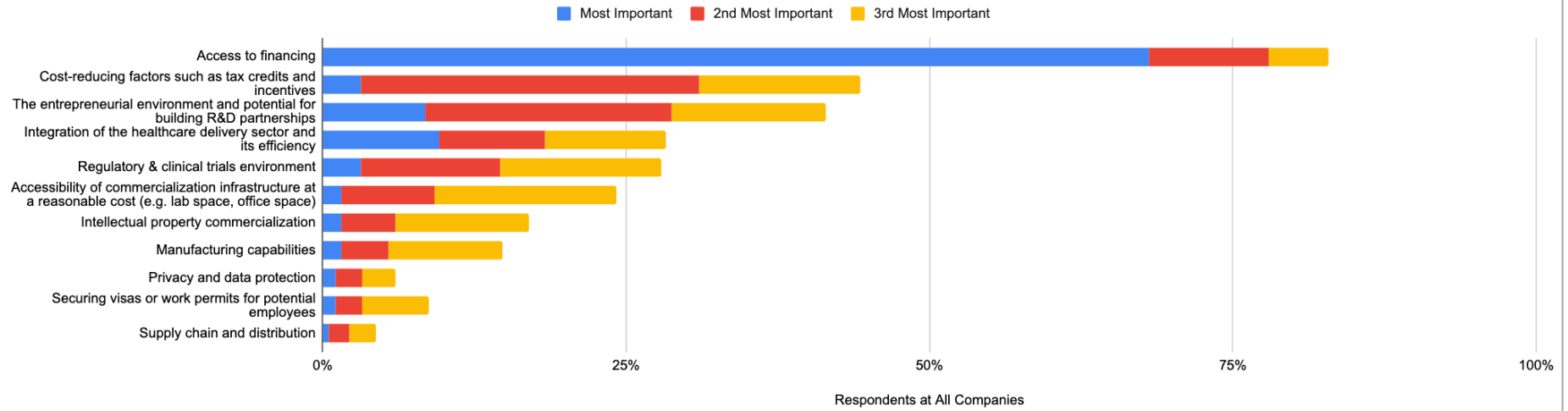
Respondents were also asked to describe in their own words the one thing that if implemented quickly that would turn the Canadian health science industry into a driver of the post-pandemic economy. The most frequent responses are ideas relating to access to capital and government funding and are given by 22% and 20% of all respondents, respectively, as shown in Figure S10 in the Appendix.

Further analysis reveals differences in priorities for respondents at companies of different sizes, as shown in Figure S11 and Figure S12 in the Appendix.

“Access to financing” is identified as the top area for focused action by 74% of respondents at companies with 11 or more employees and by 86% of respondents at companies with 10 or fewer employees. Fifty-three percent of respondents at companies with 11 or more employees say “cost-reducing factors such as tax credits and incentives” should be a top area for action as compared with only 40% of respondents at companies with 10 or fewer employees. The need for new tax incentives that benefit larger companies that are attempting to scale up is illustrated by one of our key informants who says, “SR&ED programs are a backbone that are critically important, but they fall off at a certain point and it leaves you hanging beyond that. I think that making sure there's some kind of continuity to scale for tax credits and incentives is important.”

The survey data suggest that forming collaborations is more challenging for smaller companies: the “entrepreneurial environment and potential for building R&D partnerships” is more important to respondents at companies with 10 or fewer employees with 47% listing it in their top three priorities as compared with only 29% of respondents at companies with 11 or more employees.

Which aspects of the health science industry in Canada should be the top three areas for focused action to speed up opportunities for health science companies to succeed?



Bold Actions are Needed to Attract More Capital

Increased Support for a Health Innovation Capital Fund

As shown in the figure below, 78% of surveyed industry leaders say a health innovation capital fund is the top action that should be prioritized to increase access to capital with 49% rating it as the number one priority. Forty-seven percent of respondents say, “consolidating government funding programs” and “having an end-to-end process, extending from technology evaluation to commercialization to facilitate procurement” should be top priorities; and 44% say having “tax credits to cover the expense of developing intellectual property” are in their top three priorities. The Canadian Council of Innovators (CCI) has made eight recommendations on how to rejuvenate Canada’s economy following the pandemic. CCI is calling for the Canadian government to update the scientific research and experimental development (SR&ED) tax credit to include the costs of filing and prosecuting a patent as an eligible expense under the SR&ED program²¹.

Several mechanisms that have been used in the past to increase access to capital were less attractive to industry leaders: flow-through investment shares, adopting globally competitive tax policies and a labour-sponsored fund program are rated as priority actions by only 20%, 18% and 14% of respondents, respectively. The results are not significantly different for respondents from companies with 10 or fewer employees versus those with 11 or more employees (see Figure S13 and Figure S14 in the Appendix).

The finding that a health innovation capital fund is the top priority is consistent with OBIO’s 2015 survey of over 80 companies in which 67% said establishing a health innovation capital fund that invests directly in healthcare companies was an action that the Ontario government should take immediately²². Support for a health innovation capital fund has grown by 11 percentage points in the past five years, suggesting that access to financing is a more pressing need for companies today.

In 2018, the federal government introduced the Venture Capital Catalyst Initiative (VCCI) to use CA\$450 million to create new venture capital funds to be managed by selected “funds-of-funds” managers in three streams, only one of which covers a specific industry (cleantech). In August 2020, BIOTECanada submitted a recommendation to the federal government to invest CA\$500 million to establish a specific life sciences VCCI that would be “managed by life science investment specialists”. BIOTECanada points out that Canada has only seen one new fund manager emerge in the past 14 years, compared to a dozen or so in the US in the past two years and proposes that the new fund could provide incentives to attract private capital from Canadian institutional investors and international sources in order to grow the availability of capital²³.

In addition to the federal government’s VCCI, there is potential for provinces to increase their support for the health science industry. In June 2020, the Québec government, through Investissement Québec, and Fonds de solidarité FTQ, announced that it will set up a co-investment envelope of CA\$150 million over five years to support the growth of Québec’s life sciences sector, in response to a direct request from industry players. The investment includes CA\$75 million that the Fonds had previously set aside for the sector.

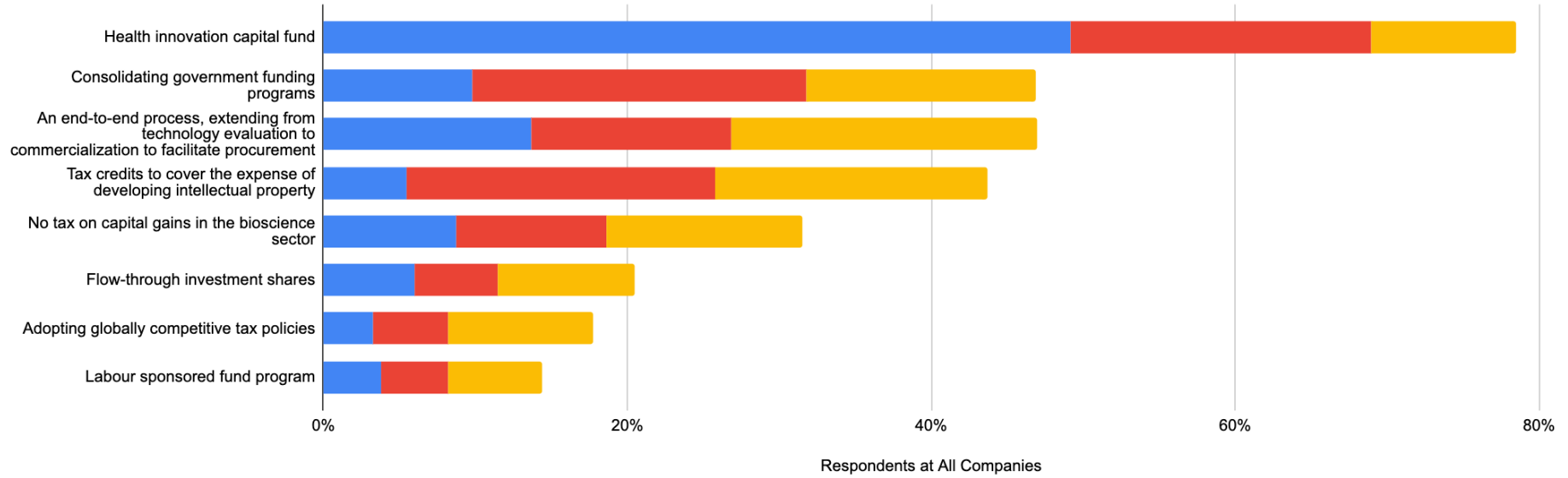
²¹ A Plan for Economic Recovery and Reorientation – How Canada Achieves Post-Pandemic Prosperity. Council of Canadian Innovators. September 1, 2020.

²² How Canada should be Engaging in a \$9 Trillion Dollar Health Economy Industry Engagement & Perspectives Report. Ontario Bioscience Innovation Organization; 2016.

²³ Submission to Pre-Budget Consultations in Advance of the Upcoming Federal Budget. BIOTECanada; August 7, 2020.

In your opinion, which three actions should be prioritized to increase access to capital?

■ Most Important ■ 2nd Most Important ■ 3rd Most Important



Institutional Investors Should Provide Capital

All interviewed key informants agree that more Canadian investment funds need to back the health science industry. As one says, “There’s enough capital to drive Canadian innovation and certainly you see a whole series of new companies that can compete globally, yet all the money is being raised primarily from the United States. So that’s tough for the companies but it’s really bad for the country as a whole because you miss out on the best returns because as a capital market, Canadians have decided to sit it out. We need to have institutional funds understand the potential upside.”

In Canada, the pension fund sector holds about 15% of the total assets of the country’s financial system but these giant institutional funds have not invested in the health science sector in the past. As one interviewed key informant says, “Canada’s biggest asset is the pension funds. They’re not participating at all, which is frustrating. They invest in foreign companies’ medical initiatives, but not in Canada. So that’s always been an issue. They’re sitting it out completely which is perplexing. I’ve spoken to some people at these funds so they’re perplexed too because it’s a hedge: if you can get better healthcare in Canada, and release better products, it helps their members. It’s a direct correlation. These are Canadians who put money into a fund and that fund is not supporting healthcare innovation, which directly impacts them. It’s perplexing why there hasn’t been any movement from that perspective.” Another says, “I think solving the pension fund problem is a really big one. I think this is probably one of the most efficient ways to unlock a lot of money and help Canadian companies.”

The Globe & Mail recently reported that institutional investors are starting to take an interest in the sector: the Canada Pension Plan Investment Board has allocated a small amount of its assets to the global biotech sector and other pension funds are poised to follow suit²⁴. Nevertheless, wise investment in bioscience ventures requires a sound understanding of the technology and few funds have sufficient knowledge to specialize in health science firms. As one industry leader we interviewed says, “The lack of awareness is one of the biggest obstacles to the success of the industry in Canada because nobody knows, and nobody cares.”

Investors Must Pick Winners and Back Them All the Way

Industry leaders we interviewed stressed that in order to create a critical mass of thriving Canadian health science companies, knowledgeable investors – both in the government and private sectors – must pledge support to companies that are best positioned for success and support them at all stages of development.

As one industry leader interviewed by OBIO says, “One of the very important lessons that the United States is teaching us is if they wanted things to fail fast, they would put a little bit of money into a lot of companies to see which one would fail. What they’ve done differently is put a lot of money into the ones they think will succeed from beginning to end. They’re willing to take the risk because they’re confident in their decisions. They may make a mistake but on the whole, the degree of confidence in their minds is like, ‘We did our homework, we did it thoroughly, we’re experts in this area therefore we’re willing to take the risk.’ Because what’s the alternative? Not taking the risk? Ensuring failure? They understand the consequences of failure. In Canada, we go for bronze or silver. In the United States, you go for gold all the time. Don’t bring gold, go home. For Canada, it’s great if we get on the podium, which doesn’t work. That’s why the U.S. sector thrives.”

²⁴ Biotech blind spot: How Canada’s big investors missed the boom happening right now. Globe & Mail; July 3, 2020.

Another says, “It’s important as a strategy to recognize that we’re just barely getting to critical mass in about three places in Canada, maybe two and really we should be doubling down in those places and spending the energy there as far as their strategy goes rather than trying to be all equitable and trying to have a smattering of it here and try to get the critical mass of above the line in a few places. I have a sense that’s accelerating but you know, there’s still a lot of failures.”

Another interviewee explains that it will be critical for any new fund to have dedicated experts who can make shrewd investments: “What I do wish is that the BDC matching investment program was given more attention, to ensure that it has adequate funding and that it’s being administered and the capital is being dispersed, expeditiously. If the bandwidth to evaluate companies and disburse funds was better then, we could have completed that by now. More resources could have been put into the administration of that program.” The Logic reported that entrepreneurs are dissatisfied with the BDC fund matching program launched in April 2020²⁵.

Canadians Need to Support Our Domestic Industry

The pandemic has meant that the public is now more aware of the issues and importance of a thriving domestic industry. Countries are negotiating with manufacturers to ensure they receive effective SARS-CoV-2 vaccines as soon as they are available and the Government of Canada is making deals with companies based in several different countries, including China²⁶, because no Canadian biomanufacturing facility is capable of producing a vaccine at regulatory standard to provide national coverage²⁷.

An industry leader we interviewed says, “I think the new normal is going to have a greater appreciation for the economic importance of some of these basic biotech tools to society. All of the different things that have been important in pandemic response have made or broken countries’ economies. I think that there’s going to be a much greater appreciation of both the risks and benefits of health technology.”

Another says, “I think the public is ready to engage with the health science industry and I think they should voice it through all the means that they can. I think it’s really important that people decide if a healthy innovation infrastructure and ecosystem in Canada are going to be part of our economy or not. People need to have a voice.”

Another says, “In the United States, the capital markets and investors, the public now see biotech, the vaccine makers, the drug makers in a more positive light. Or even more importantly, a lot of this whole sector was not on anybody’s radar for the great majority of Americans and now it is. That hasn’t happened in Canada. I would say Canadians as a whole still don’t know that there’s a biotech sector here. The industry as a whole hasn’t spent a lot of time trying to shape public opinion; it’s tried to shape responses from government, but I think public opinion needs to be a pillar of future activities because governments do respond to public opinion more than lobbying.”

There is an opportunity to involve the Canadian public in growing the health science industry – this could be through retail investing, citizen advocacy and joining the workforce of highly-skilled employees.

²⁵ Startups say BDC terms for COVID-19 relief funding too prohibitive. The Logic; October 13, 2020.

²⁶ Here’s how Ottawa believes it can get Canadians to the front of the line for a COVID-19 vaccine. Toronto Star; September 1, 2020.

²⁷ Canadian access to coronavirus treatment is threatened by weak manufacturing capacity. Globe & Mail; April 10, 2020.

Driving Adoption

Launching in Canada

International health science companies rarely prioritize Canada in their launch plans because the market is only the tenth-largest worldwide, which means that Canadians experience delays in access to innovative products. If Canadian health science companies were supported to launch in Canada, then both the country's population health and economy would benefit.

Almost all companies we surveyed (96%) have launched or intend to launch a product in Canada. A launch in Canada allows companies to generate revenue in their home market and allow them to fund expansion into larger and more lucrative markets like the United States, Europe and Japan.

As one industry leader says, "As a start-up diagnostics company if I could succeed in selling the product in my domestic market and I could start generating revenue that would give me a huge leg-up on attracting more investment to create more commercial sales ex-Canada."

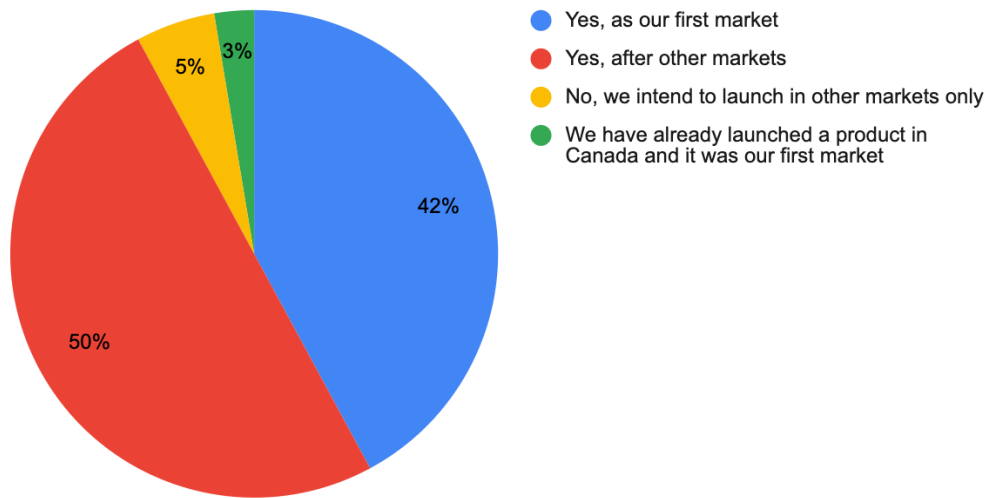
Half of surveyed industry leaders from pre-revenue companies say they intend to launch a product in Canada after other markets compared to 42% who say Canada will be their first target market. This finding suggests that there is opportunity to make launching first in Canada more attractive to pre-revenue companies.

The intentions of leaders from pre-revenue companies contrast with the realities of respondents from companies generating revenue: 29% say they have already launched a product in Canada and it was their first market compared to 15% who say they have already launched in Canada and it was a secondary market. The lower numbers of companies with revenue who have launched in Canada compared to pre-revenue companies who intend to may indicate difficulties in launching in Canada or may reflect the attractiveness of other larger markets, particularly the United States, the world's largest market.

As one industry leader says, "The United States is the big market everybody needs to penetrate. I think the big question is understanding what that U.S. market looks like and how a Canadian company can access that."

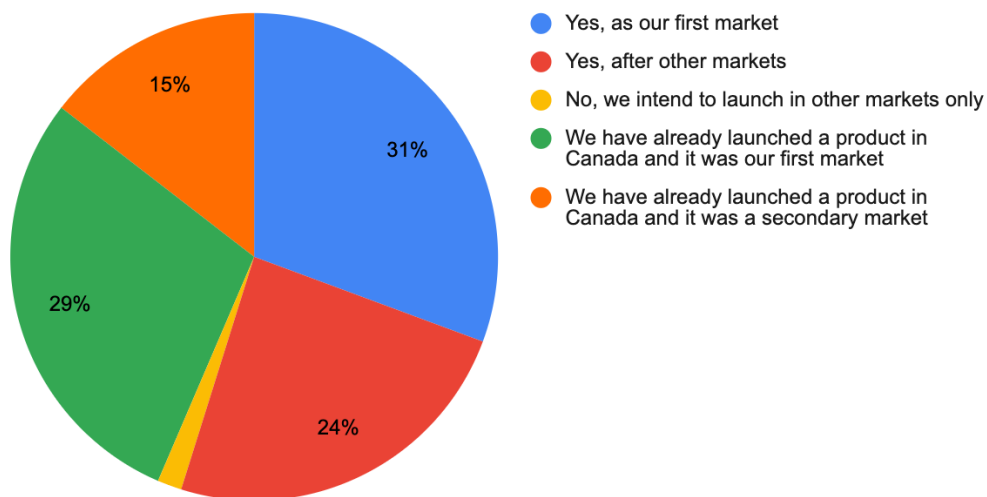
Do you intend to launch a product in Canada?

Respondents at Pre-Revenue Companies



Do you intend to launch a product in Canada?

Respondents at Companies with Revenue



Overcoming Barriers to Adoption

Insights from Interviewed Key Informants

Industry leaders we interviewed and surveyed identify a strong need for support to navigate the regulatory and procurement systems across Canada because of the challenges they have encountered.

As one interviewed key informant says, “I think that there's no clear mechanism to get a product approved and reimbursed. You can get approval through Health Canada, but to get it reimbursed in both the medical device and diagnostic sectors is very arcane and no consistent framework. It's all gemish and a patchwork. And I think that generally speaking it would be fantastic if there could be a more clearly laid out pathway to say these are the steps that you have to follow to get a product reimbursed in Canada in the medical device or in vitro diagnostic sectors.” Another says, “I think procurement of Canadian healthcare technology is extremely difficult now compared to in the past and I've seen that with other companies that I'm either an investor in or I sit on the board of or part of my peer group. We all find it extremely frustrating and not sure we've seen movement on that.”

Another says, “It's very, very hard for a domestic company to get sales in Canada and the provinces kind of know that but the healthcare delivery system very much sees themselves as healthcare delivery and not innovation or aligned with the creation of a domestic industry. They're kind of indifferent to that. I know OBIO has been fairly involved in that there was an Initiative for getting your first sales in Ontario, and there are more and more programs to create alignment for R&D within a clinical delivery model so that I think that's a trend that we need to keep amplifying.”

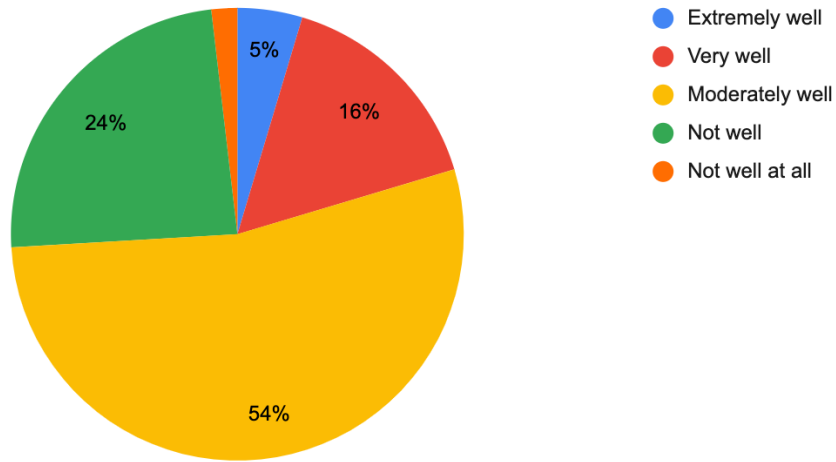
Insights from Surveyed Industry Leaders

Twenty-four percent of industry leaders at pre-revenue companies and 15% of respondents at revenue-generating companies say they do not well understand the process to get their product purchased in Canada. Only 20% of respondents at revenue-generating companies say they understand the process extremely well whereas only 5% of industry leaders from pre-revenue companies say they understand the process extremely well. Furthermore, 26% of respondents employed by pre-revenue companies say they “do not well” or “not well at all understand” the process in contrast to only 15% of respondents at companies with revenue say they “do not well” understand the process.

These findings suggest there is considerable opportunity to support companies through the regulatory and procurement process to maximize their chances of success, especially for pre-revenue companies as they plot their first product launches.

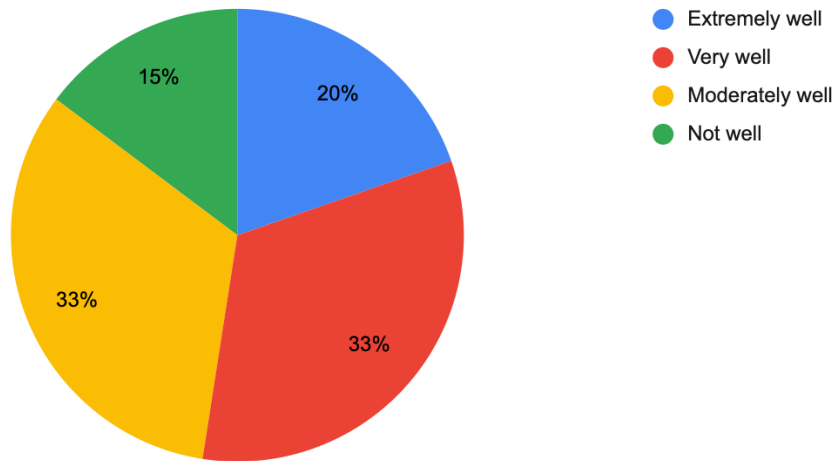
How well do you understand the process to get your product purchased in Canada?

Respondents at Pre-Revenue Companies



How well do you understand the process to get your product purchased in Canada?

Respondents at Companies with Revenue



Interviewed key informants say that fragmented procurement processes across different jurisdictions are barriers to greater adoption of innovative healthcare products across Canada. An industry leader says, “We need to go from a push to a pull where the provincial and federal governments are willing to buy new technologies, new drugs, new therapies of any kind. If you link the clinical trials in a new regulatory regime to this automatic buying then what will happen is that companies will come to Canada to do their clinical trials if they can do them faster and know there’s a payer for them at the other end right away and so instead of Canada being 20th to 30th on anybody’s “to-do” list, Canada would become the first thing on the to-do list.”

Our survey found that 88% of industry leaders think “working with industry to establish a network of early adopter institutions and invest in infrastructure and programming to pilot new drugs and technologies at Ontario institutions” should be prioritized, with 55% of respondents rating it as the number one priority.

Before the pandemic began, OBIO had already established a network of early adopter health institutions called the OBIO Early Adopter Health Network (EAHN™) “to facilitate the evaluation and adoption of promising health science innovations that could be commercialized in Ontario to benefit human health, the health care system and Ontario’s economy.” Currently, EAHN does not include evaluations of therapeutics and this could be an opportunity for expansion of the program.

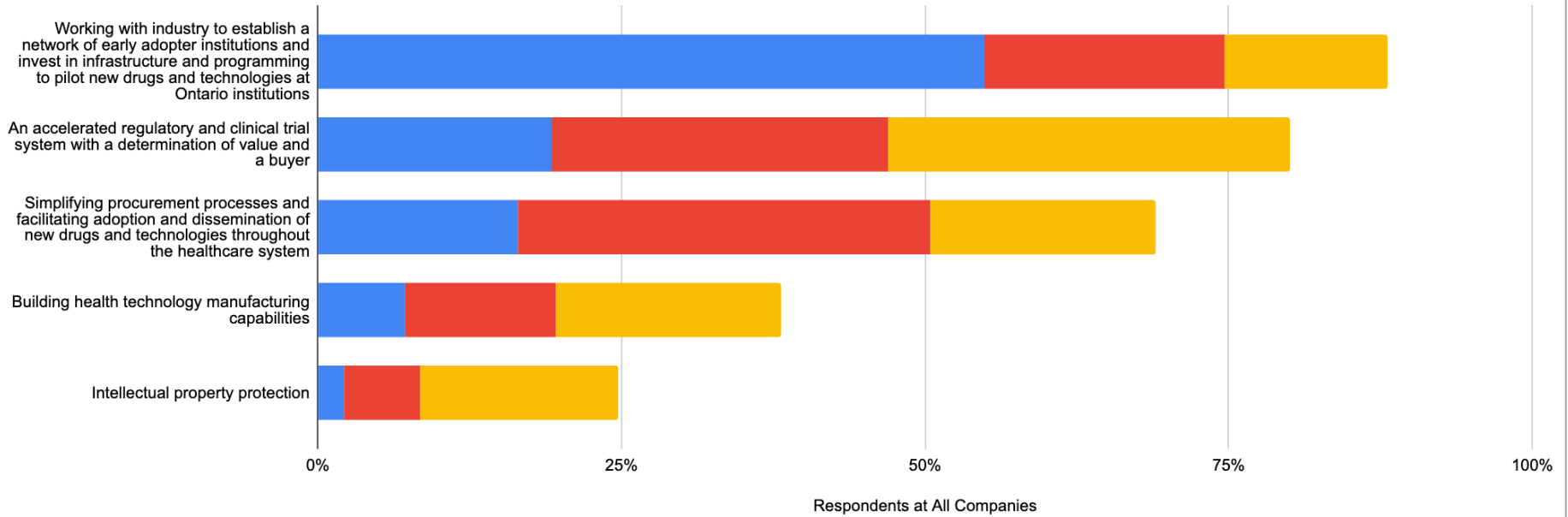
There was also strong support for “an accelerated regulatory and clinical trial system with a “determination of value and a buyer” and “simplifying procurement processes and facilitating adoption and dissemination of new therapeutics and technologies throughout the healthcare system”, which were top three priorities according to 80% and 69% of respondents, respectively.

Further analysis reveals differences in priorities for respondents at companies of different sizes, as shown in Figure S15 and Figure S16 in the Appendix.

“Simplifying procurement processes and facilitating adoption and dissemination of new drugs and technologies throughout the healthcare system” is a top-three priority for 79% of respondents at companies with 11 or more employees as compared with only 65% of respondents at companies with 10 or fewer employees. Respondents were also asked to identify “one thing that if implemented quickly that would turn the Canadian health science industry into a driver of the post-pandemic economy”, as shown in Figure S10 in the Appendix. Respondents from companies with 11 or more employees make twice as many suggestions related to adoption and purchasing as respondents from companies with 10 or fewer employees (30% vs. 14%). As one surveyed industry leader writes, “We repeatedly see our institutions procuring inferior solutions from large international players without any effort made to support local innovators.” Another survey respondent writes of the need to create “market pull in Canada through incentives including a network of early adopters and key opinion leaders that we can readily access and reimbursement models that would stimulate adoption of new technologies in the sector.”

In your opinion, which three actions should be prioritized to increase market access?

■ Most Important ■ 2nd Most Important ■ 3rd Most Important



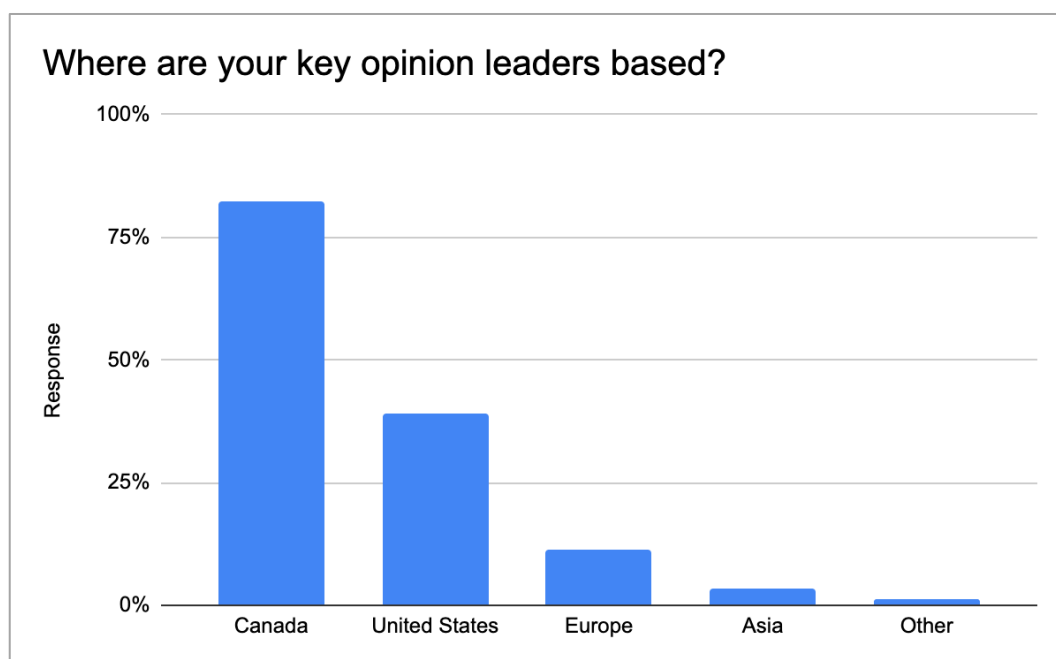
Identifying Early Adopter Institutions

The top priority for driving adoption identified in the survey is “working with industry to establish a network of early adopter institutions and invest in infrastructure and programming to pilot new therapeutics and technologies at Ontario institutions”. A crucial enabler of building an effective network is working with key opinion leaders (KOLs), experienced clinicians who are trusted to give candid feedback to health science companies and champion new products among their peers. However, several interviewed industry leaders describe that identifying KOLs in Canada is not straightforward.

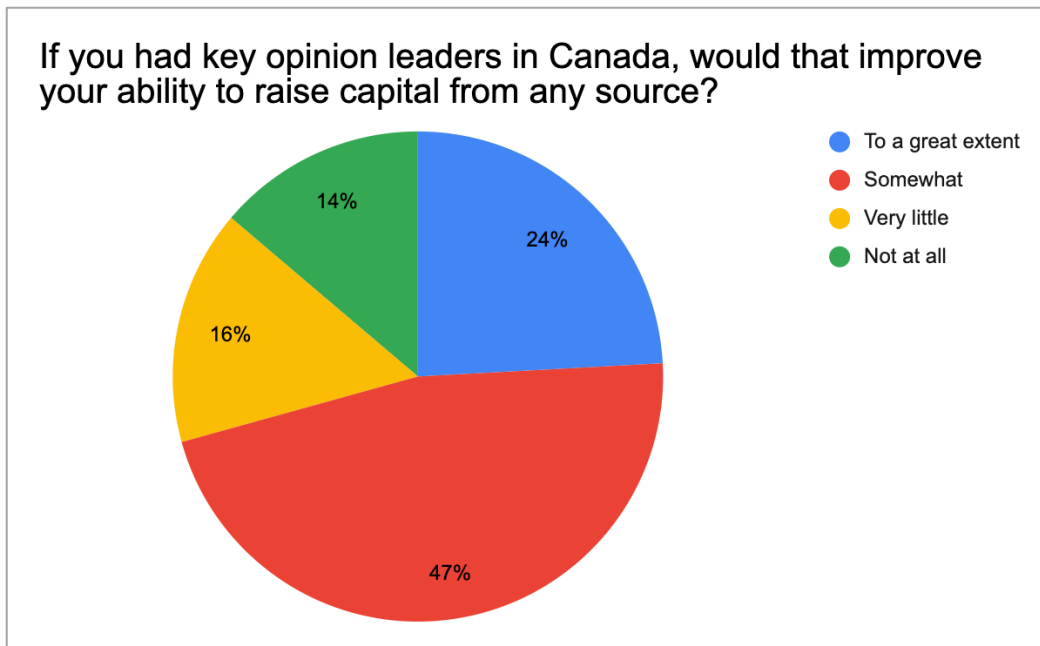
An interviewee says, “One of the things we've called out is that our show sites for our companies and products are in New York, San Francisco and Milwaukee and so it's really challenging when you're working on hardware and software to not have your users in your backyard and that's probably as significant of a problem as funding is. Ultimately, you should be perfecting your products in your backyard and you should have very close links to these customers. And it's been a challenge in Canada. And I think that needs to be addressed as well. There's nothing as important as sitting eye-to-eye with your users in the operating room. Or guiding surgery or therapy. So, if it's impacting real treatment of a patient, I think it's extremely important that you're on-site and it's in your backyard as well. Or if you bring in investors or you're bringing in new customers to see the facility, to see what you're doing, there's another dimension when you can kind of go down the street and show off the technology rather than having to do it in Switzerland or Singapore or New York City.”

Another says, “Everyone says they're innovation friendly but it's still hard to partner for your technology to fit because you need the clinical champion inside that institution to dig in and give you the time of day. A good example might be something like incubator program we were part of. We were there and they did a really nice job of introducing us to their clinical people but the people they introduced us to, their philosophy didn't align with our philosophy and we just didn't click, we had different approaches. You've just got to do that over and over until you find the right people, right interest.”

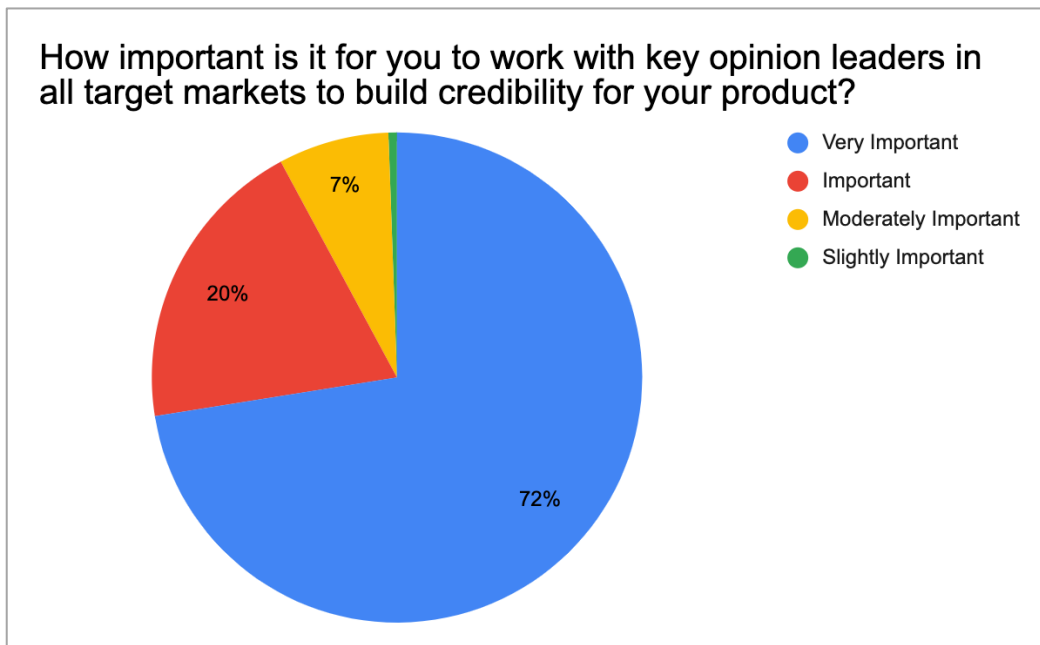
Ninety-five percent of surveyed industry leaders report that they are working with key opinion leaders either currently (75%) or intend to do so (20%). Eighty-two percent of respondents are working with key opinion leaders in Canada and 39% have key opinion leaders in the United States.



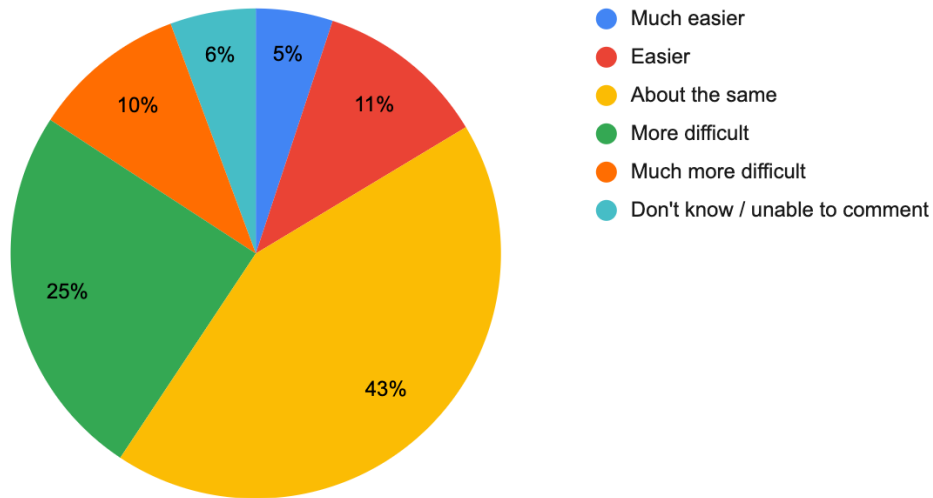
Respondents who say they are not working with key opinion leaders in Canada were asked if having Canadian-based experts would improve their ability to raise capital from any source. Twenty-four percent say their ability would be improved to a great extent and 47% say it would be somewhat improved.



Seventy-two percent of industry leaders say that it is very important to work with key opinion leaders in all target markets to build credibility for their products. However, 35% of respondents say that it is more difficult or much more difficult to find a suitable key opinion leader in Canada compared to other markets. These findings suggest that there is opportunity to broker partnerships between early-stage companies and KOLs in Canada to champion innovative products in the domestic healthcare system.



How would you rate the ease of finding a suitable key opinion leader in Canada compared to other markets?



Before the pandemic began, OBIO had already established a network of early adopter health institutions called the OBIO Early Adopter Health Network (EAHN™) “to facilitate the evaluation and adoption of promising health science innovations that could be commercialized in Ontario to benefit human health, the health care system and Ontario’s economy.” As Ontario focuses on recovery while still addressing Covid-19, EAHN™ will develop and commercialize technologies that address the pandemic while also building up health science companies that will jump-start Ontario’s economic recovery. To that end, OBIO is currently advancing the rapid evaluation of five Covid-19 technologies and moving ahead with three evaluations for products in development for other indications.

OBIO EAHN™ presents a unique opportunity to unleash the potential of Ontario’s health system by enabling innovative health science technologies to be evaluated, procured and disseminated, building industry and creating jobs and economic growth. OBIO’s vision is that companies based in Ontario will stay and grow in the province, creating jobs and building anchor companies and ultimately supporting Ontario’s economic recovery. Canadian companies from other provinces will also be attracted to Ontario for EAHN™ and stay for the innovation-friendly ecosystem. EAHN™ should also attract investors who realize an increasing return on their investment in Ontario companies and global capital will follow.

As the ongoing evaluations under the umbrella of EAHN™ continue, stakeholders will likely identify opportunities to strategically invest in infrastructure and programming to pilot new drugs and technologies at Canadian institutions. CCI is calling on provincial governments to develop domestic healthtech strategies to increase technology adoption to improve patient outcomes. This recommendation includes creating new billing codes for testing non-standard solutions and for clinical trial activities for new innovative medical devices²⁸. Actions such as these would be complementary to the work of EAHN because a lack of billing codes is a major barrier to novel innovations in healthcare. The swift introduction of new codes for virtual physician consultations in response to the pandemic has transformed the uptake of digital health tools.

²⁸ A Plan for Economic Recovery and Reorientation – How Canada Achieves Post-Pandemic Prosperity. Council of Canadian Innovators. September 1, 2020.

Discussion

We interviewed and surveyed industry leaders on the impact of the pandemic and then asked them to think about the future. To our knowledge, this is the largest survey of the Canadian health science industry conducted in 2020.

Our study shows that the need for improved access to capital and driving adoption is stronger than ever and that several key measures could support the industry including a thoughtfully-manged, health innovation capital fund; strategic investments in infrastructure and programming to pilot new therapeutics and technologies at Canadian institutions; helping early-stage companies identify clinical champions and navigate the path to market; and involving the Canadian public in growing the health science industry. Actions related to procurement processes and facilitating adoption and dissemination of new therapeutics and technologies throughout the healthcare system would be particularly welcomed by larger companies that are scaling their products.

Appendix: Supplemental Figures

Figure S1

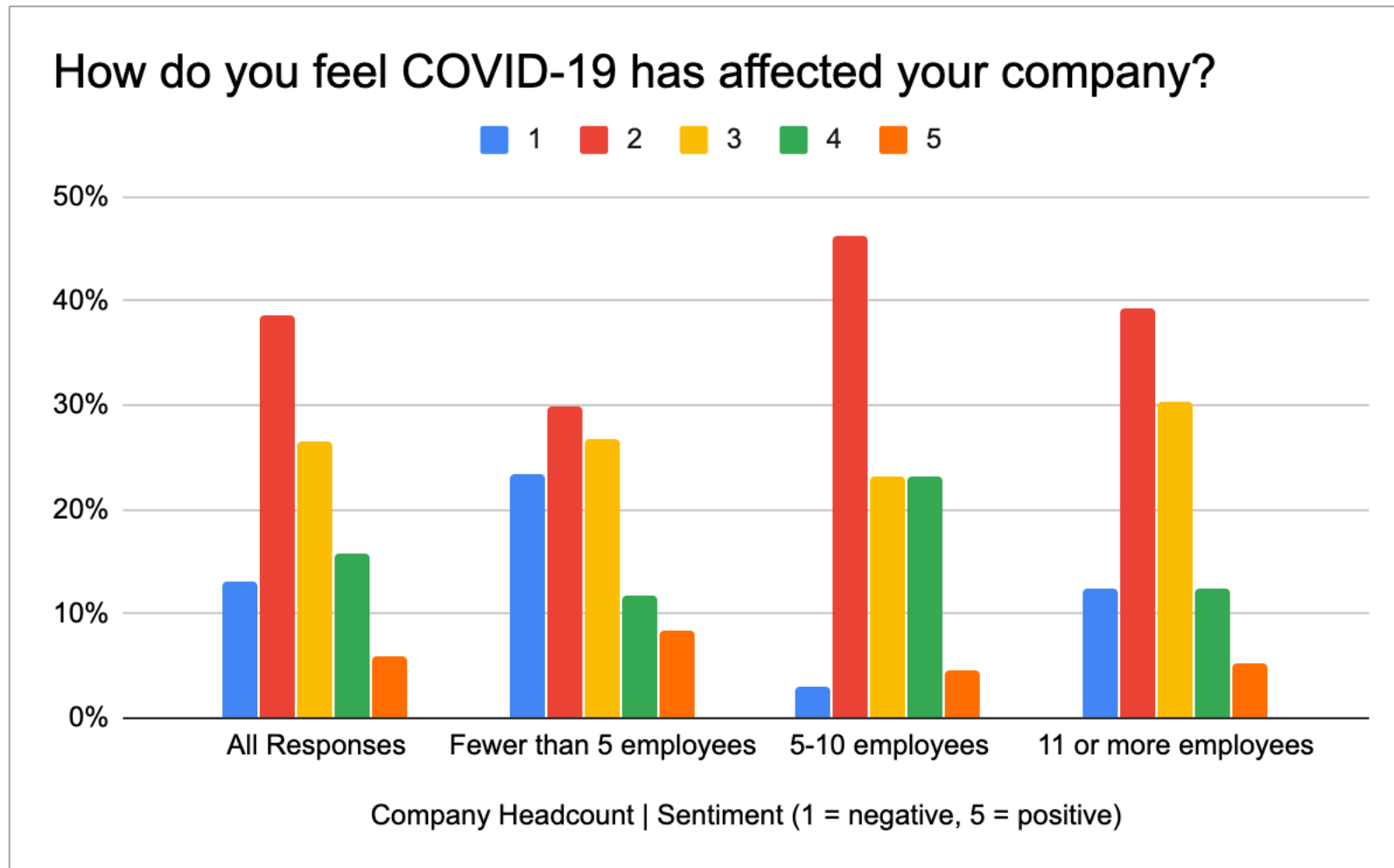


Figure S2

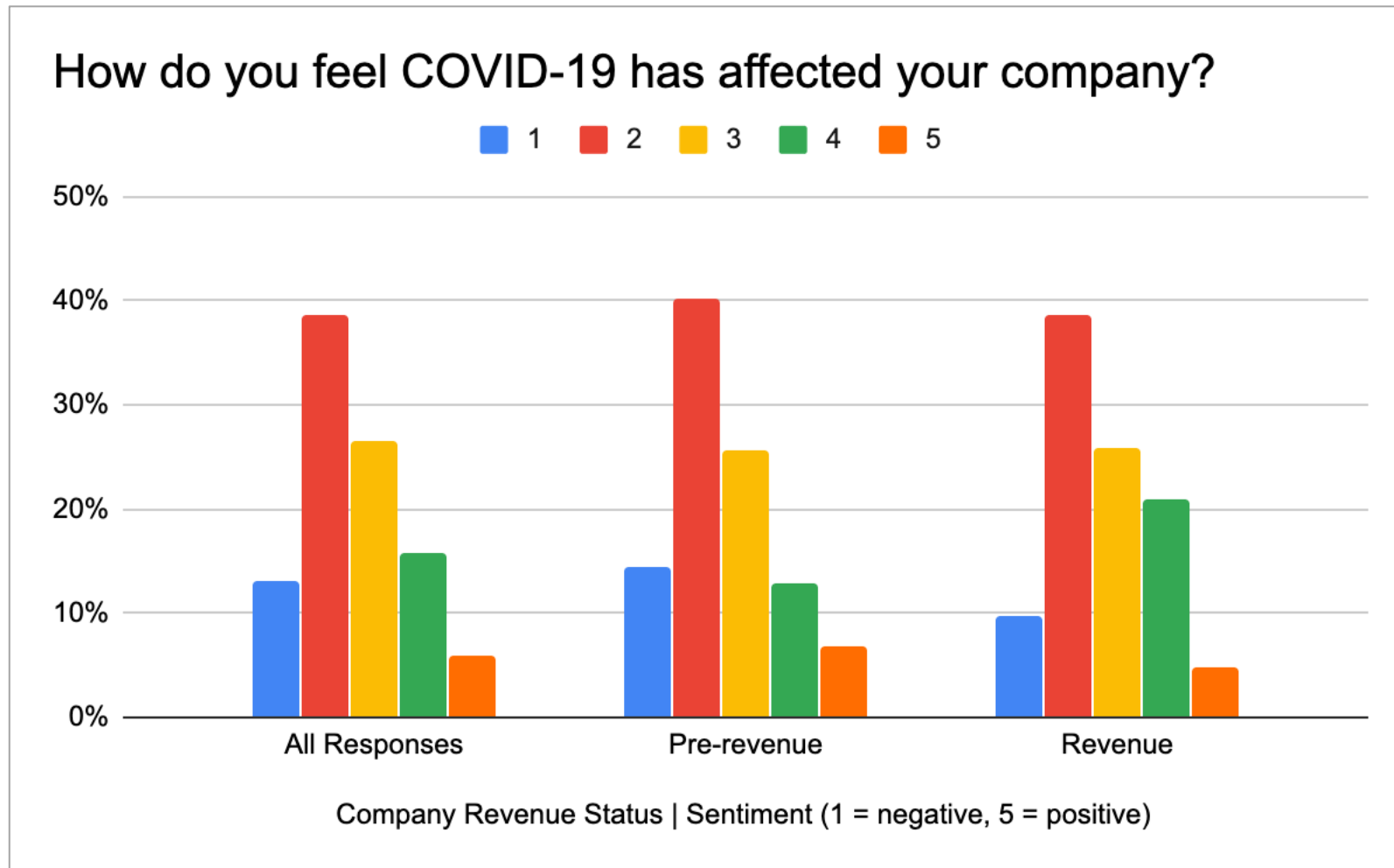


Figure S3

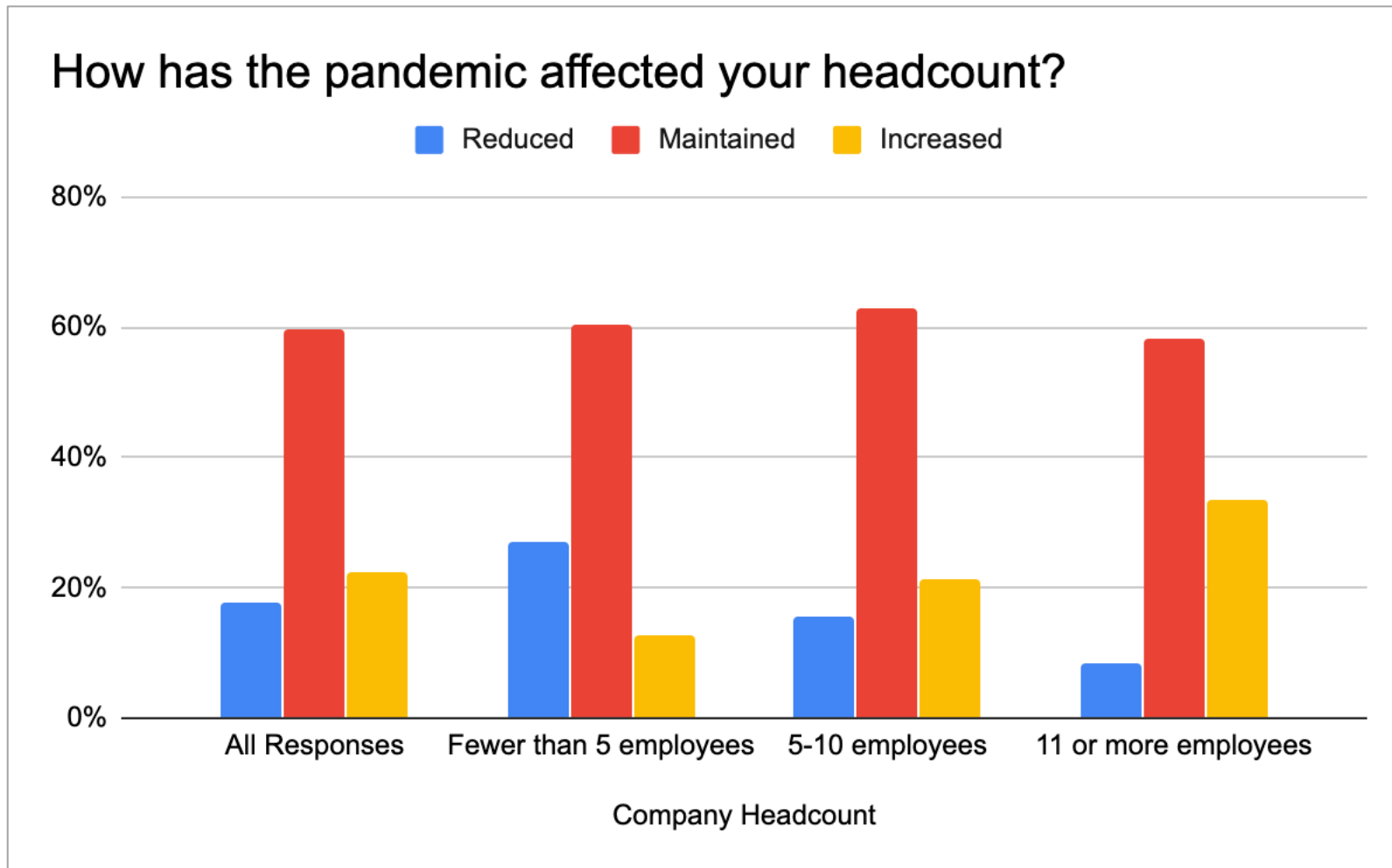


Figure S4

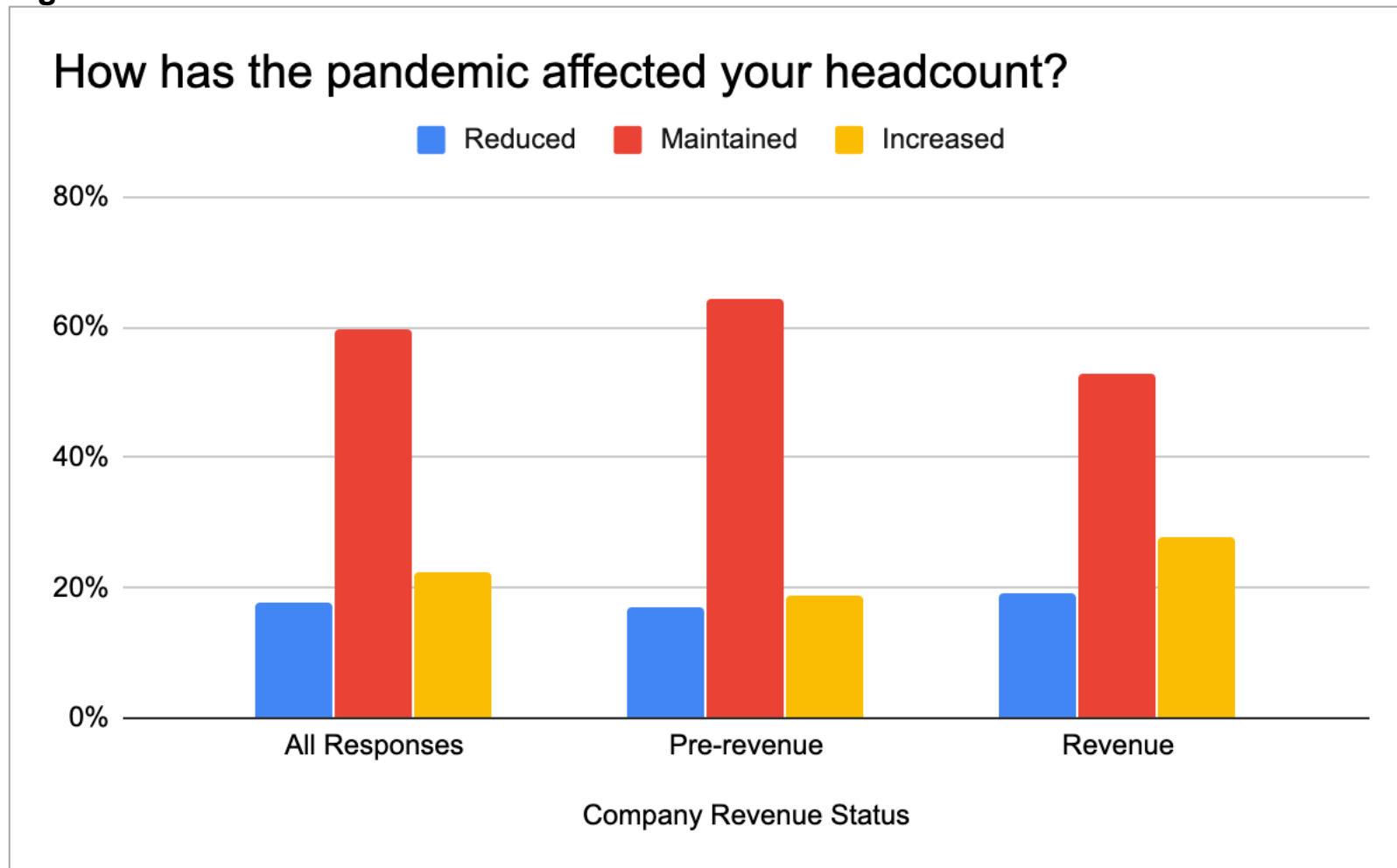


Figure S5

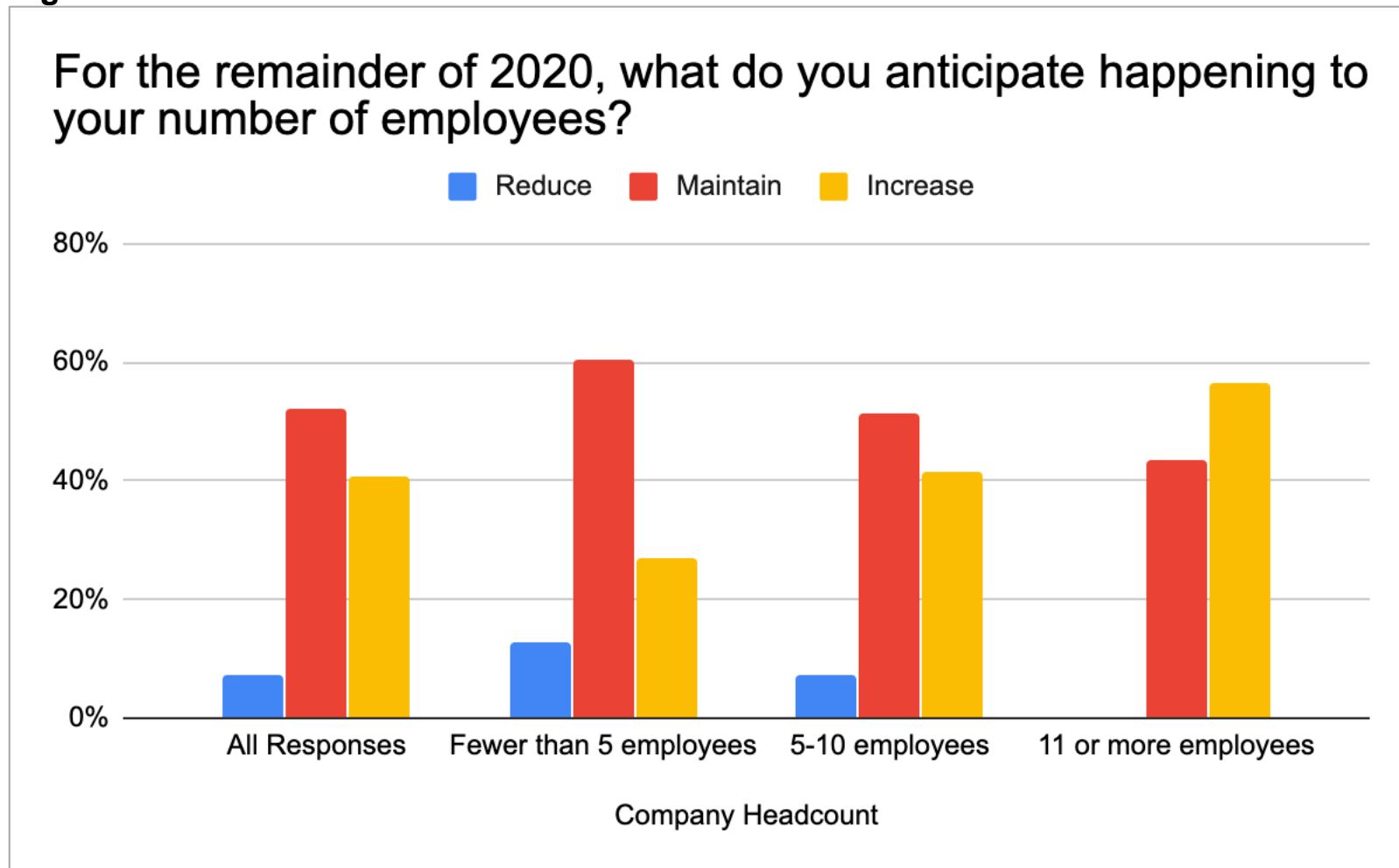


Figure S6

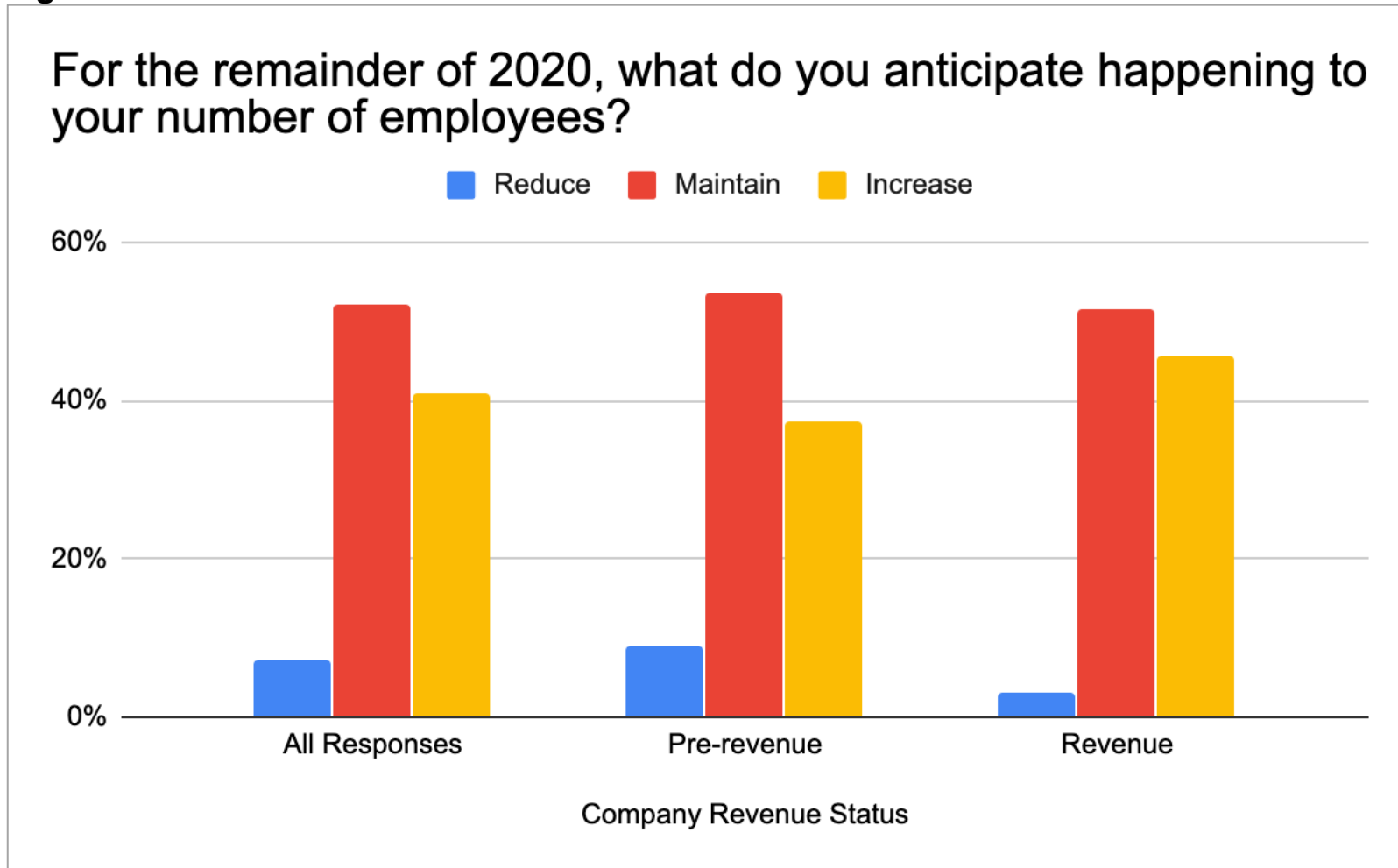


Figure S7

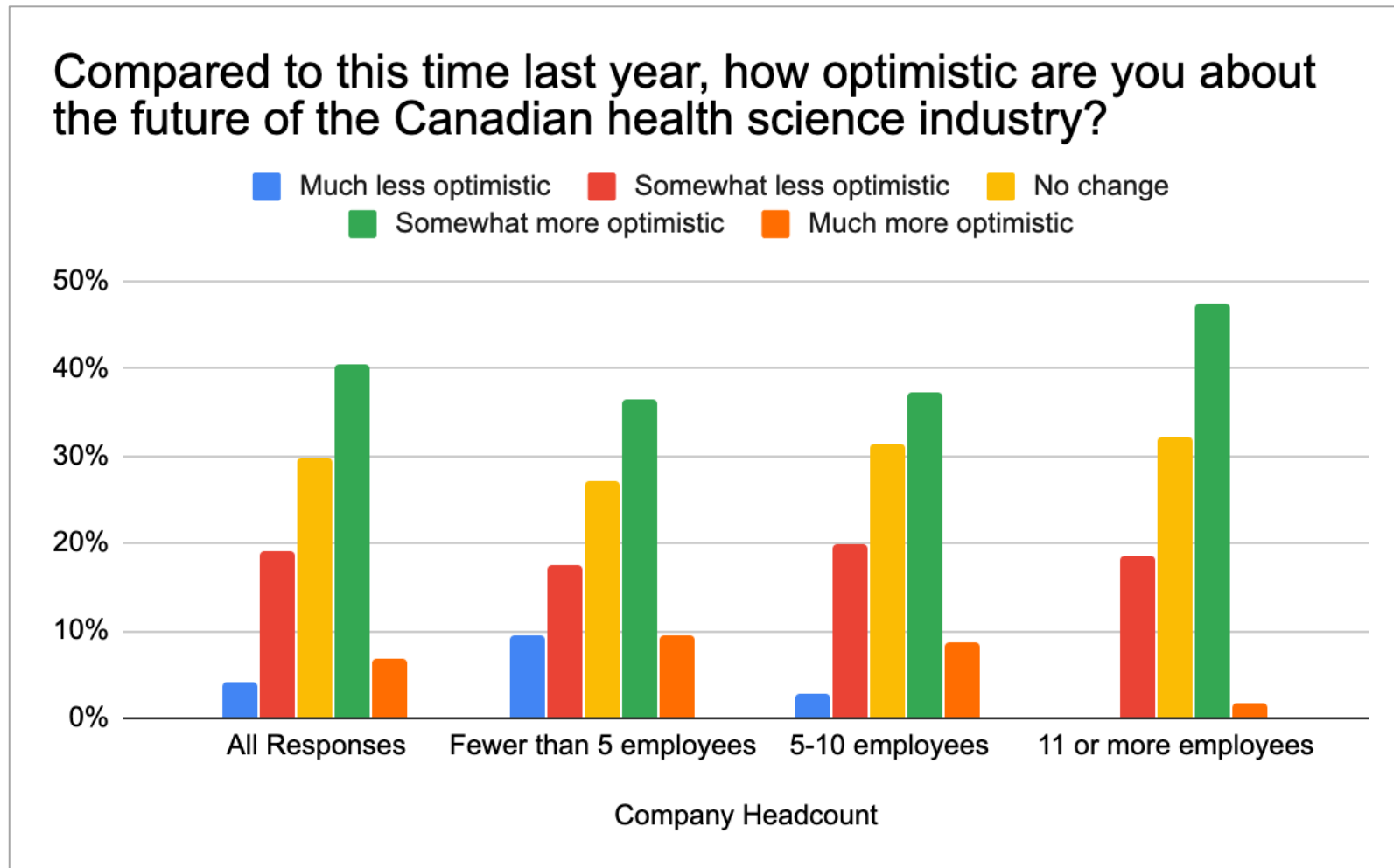


Figure S8

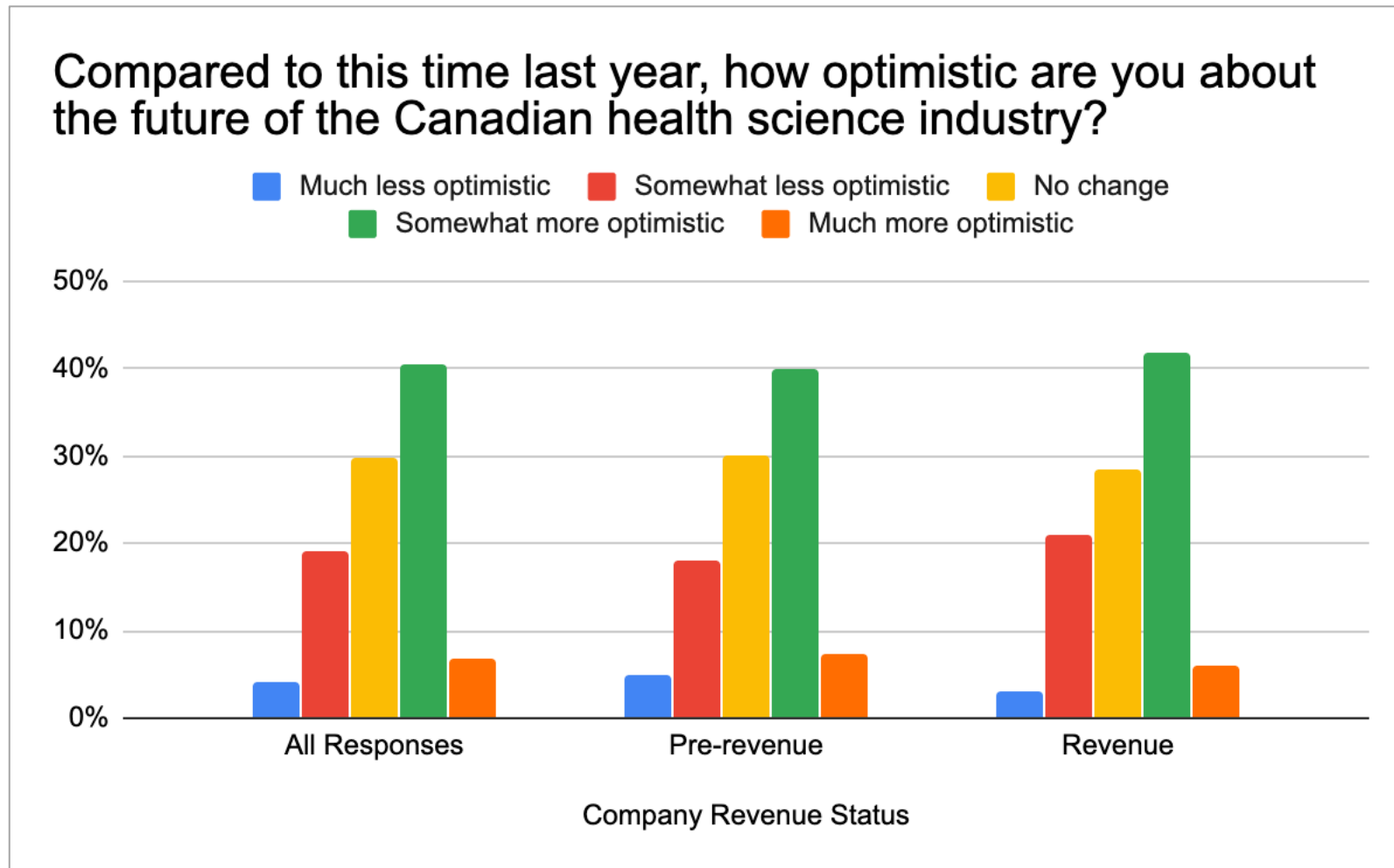


Figure S9

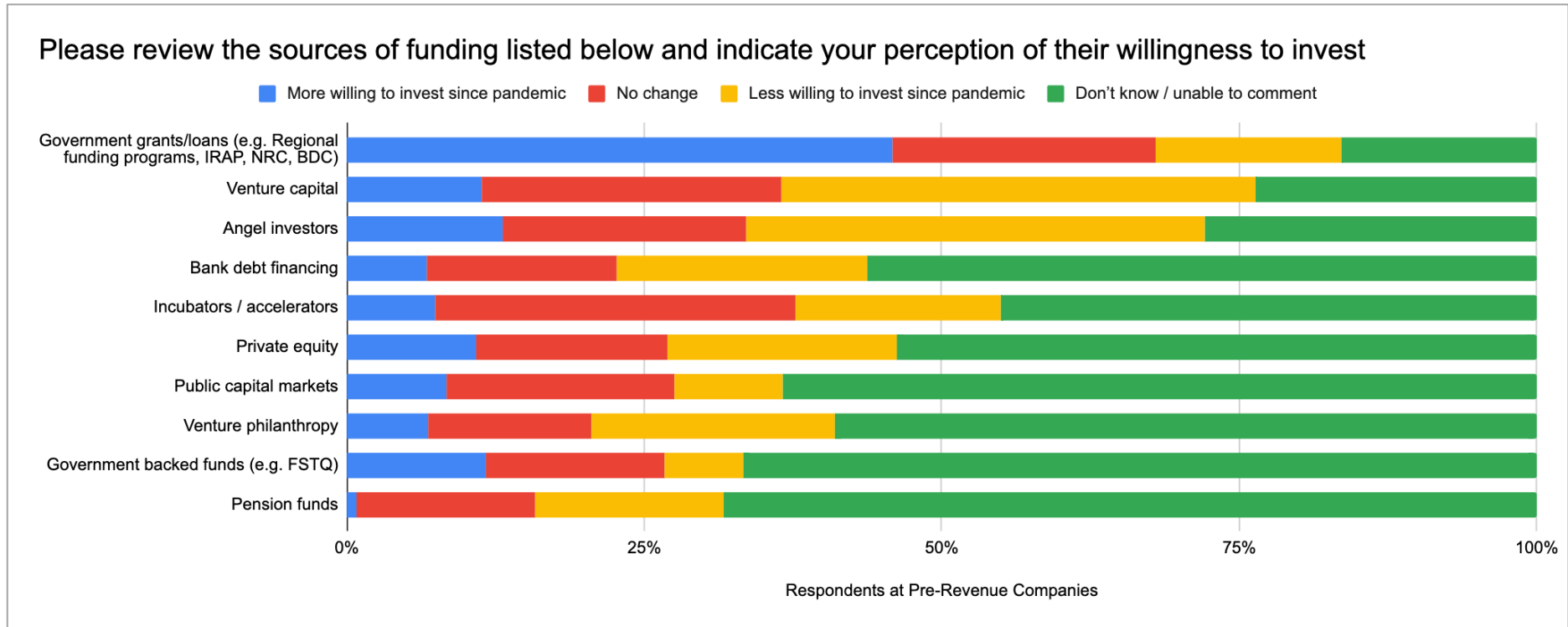


Figure S10

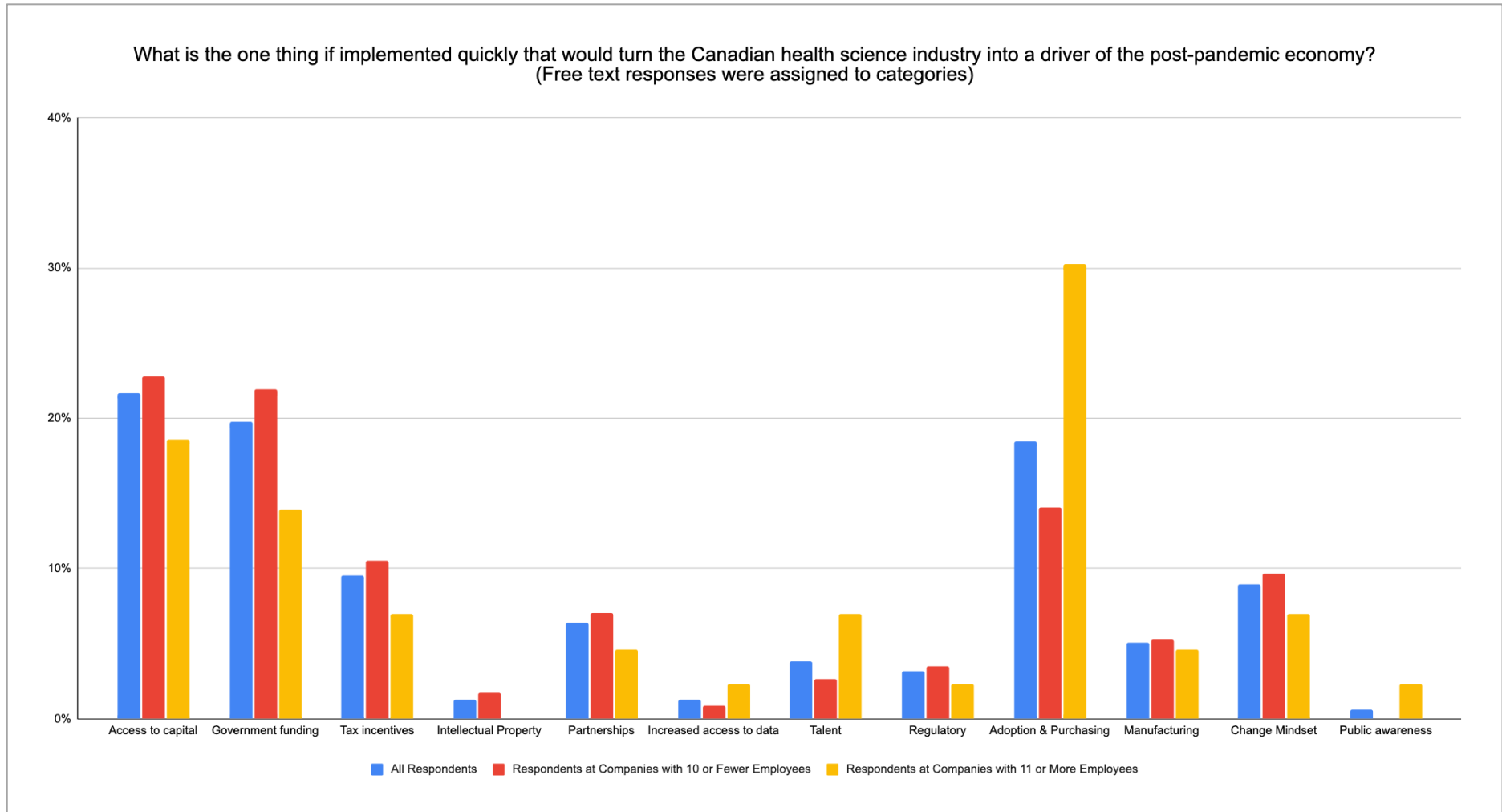


Figure S11

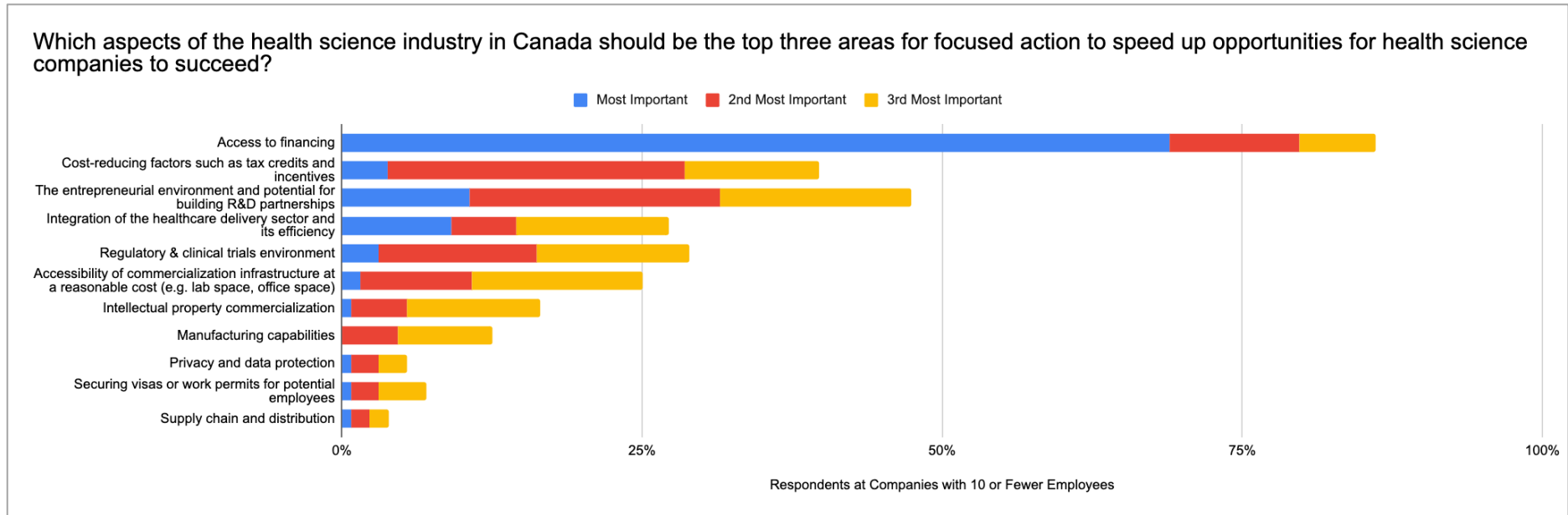


Figure S12

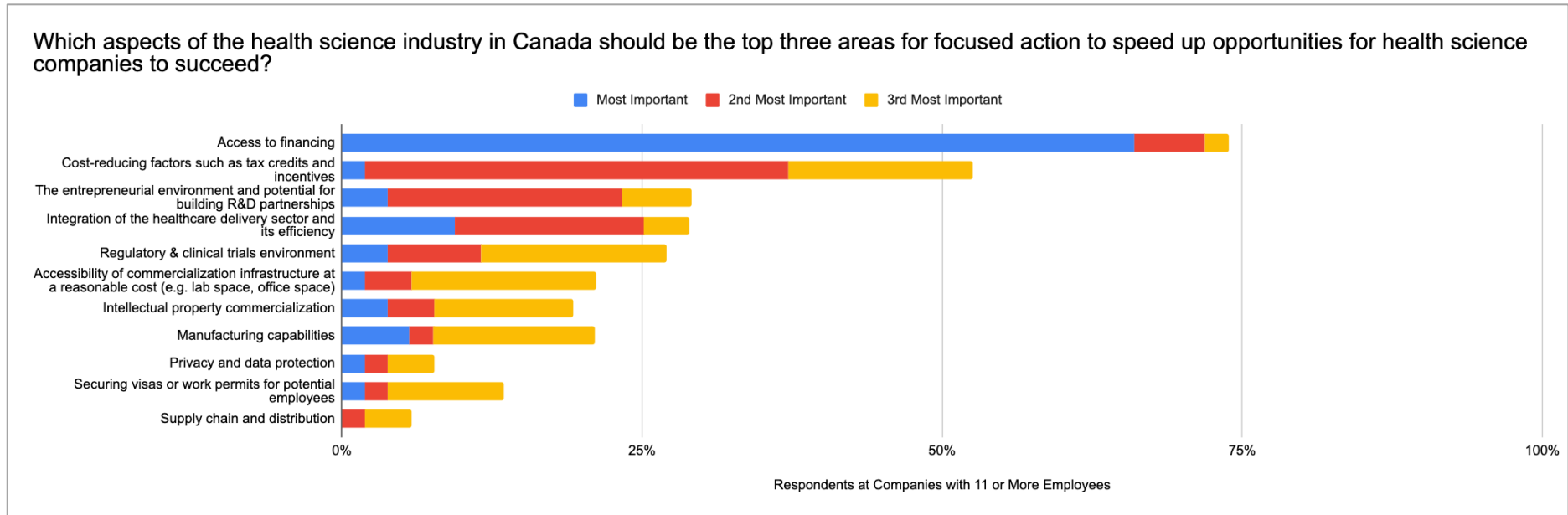


Figure S13

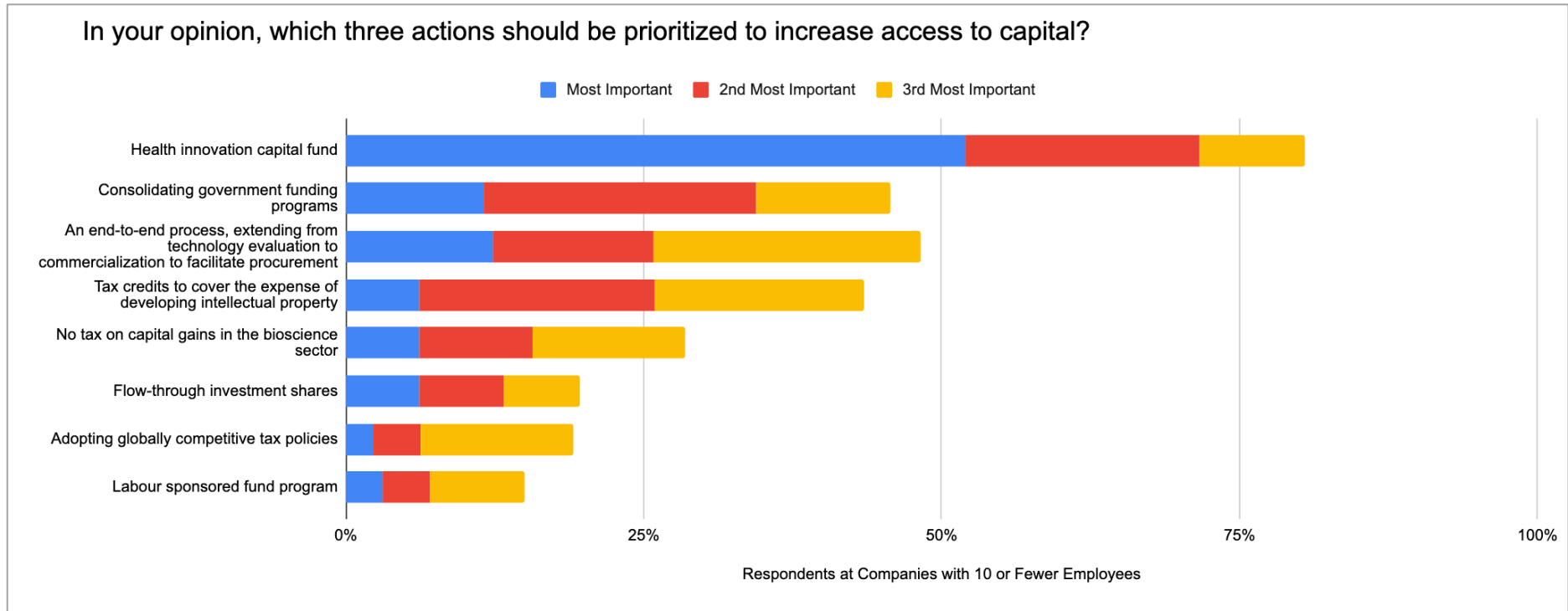


Figure S14

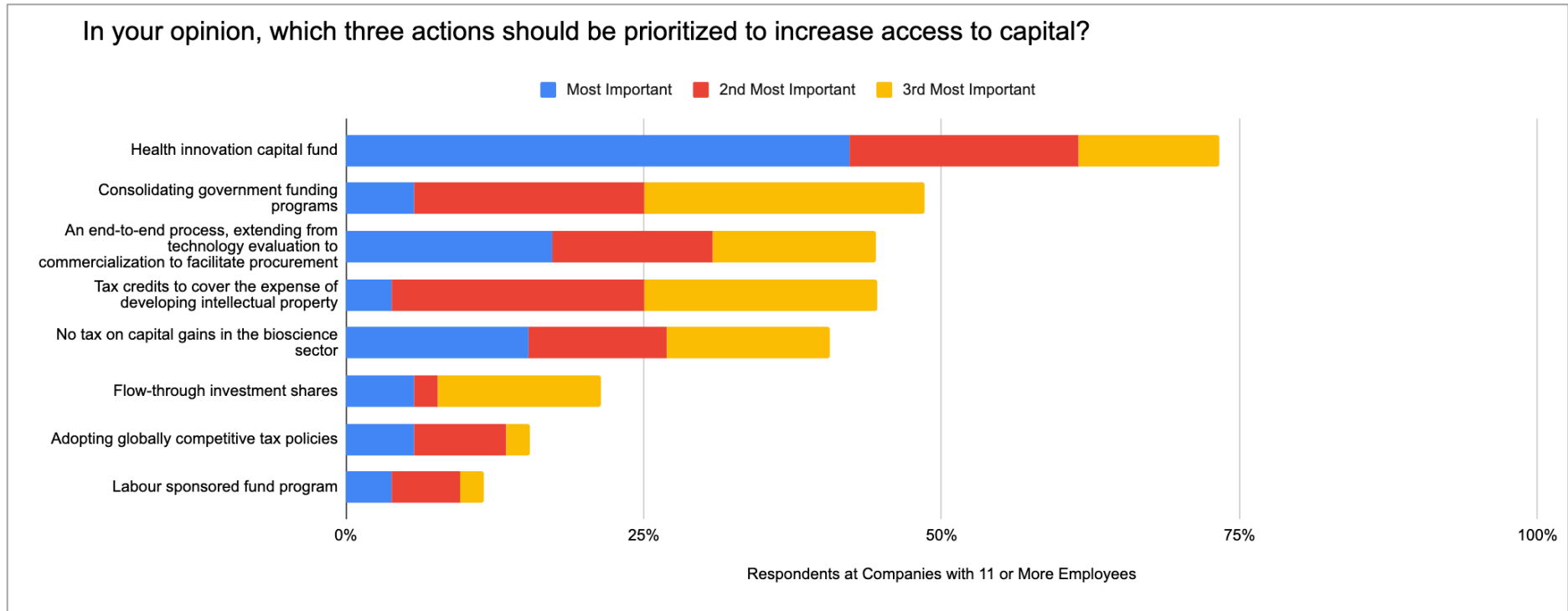


Figure S15

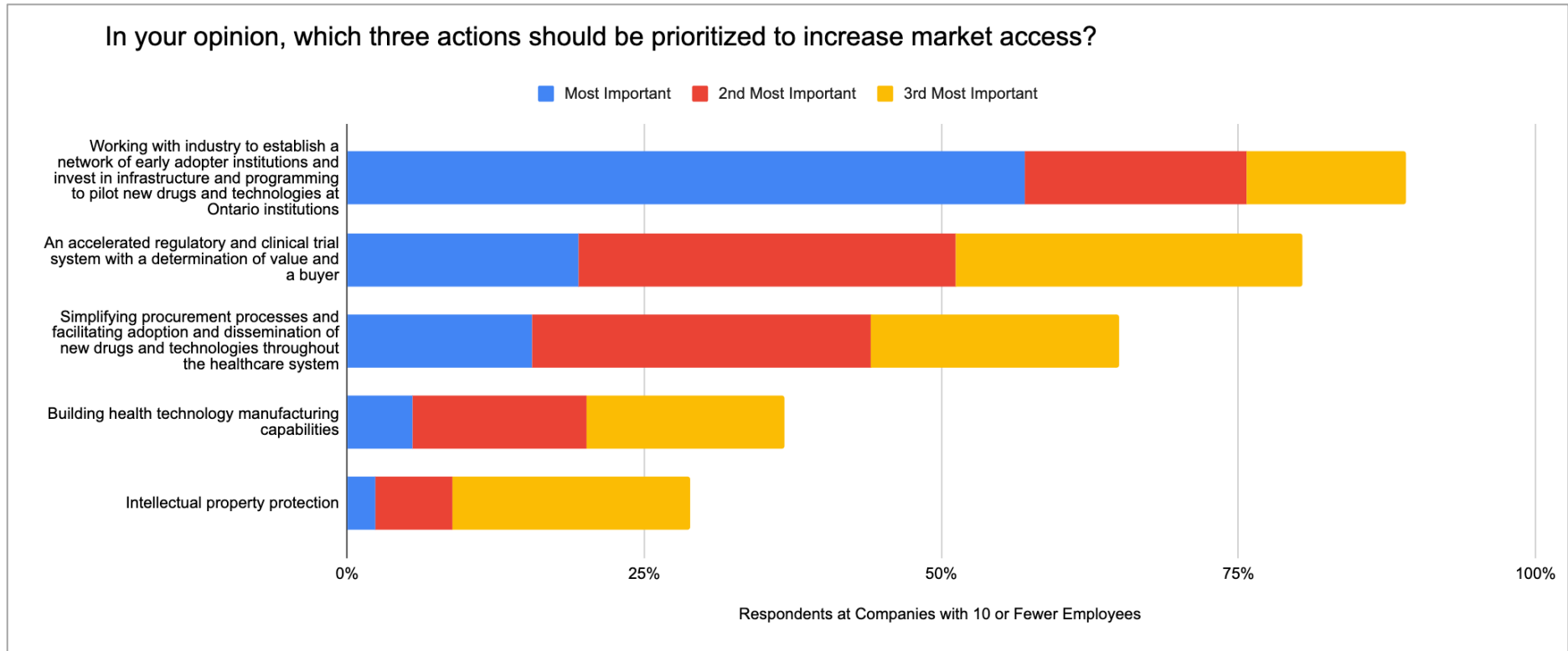


Figure S16

