



ANNUAL IMPACT REPORT FOR HEALTH INNOVATION 2016-17

This report is a comprehensive summary of outcomes and early impacts in 2016-17 resulting from research and innovation investments by Alberta Innovates' Health Innovation. This information is collected annually for the purposes of accountability and learning.

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ACKNOWLEDGEMENTS

The outcomes and early impacts demonstrated by Alberta Innovates (formerly Alberta Innovates - Health Solutions) through our health research and innovation investments reflect the achievements being made by our researchers and members of their research groups, trainees, partners, and many more. We gratefully acknowledge the efforts of our research community and partners in compiling and submitting their achievements for this report.

ISBN: 978-1-894927-87-1 (Print)

ISBN: 978-1-894927-88-8 (Online)

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EXECUTIVE SUMMARY

Alberta Innovates is committed to evolving Alberta's research and innovation system to be more responsive to the needs of Albertans and more focused on impacts. This includes the use of innovative approaches to advance the transformation of health and the health care system in Alberta to address better patient outcomes and cost efficiencies. Alberta Innovates supports health research and innovation activities that focus on the priority health needs of Albertans and Alberta's health care system. We are working with our partners to build a seamless innovation system from discovery to impact to ensure the province has a clear path for innovation, along with providing patients the best care for the best value.

This report provides a summary of the progress and impacts resulting from a portion of investments in the health care research and innovation system made by Alberta Innovates in 2016-17. It therefore serves as one source of evidence of the value being delivered to Albertans through our investments in health.

The impacts highlighted on the following page illustrate the multitude of ways that Alberta Innovates is making a difference for Albertans through our strategic investments, provincial platforms, collaborations and partnerships. These achievements result from the efforts of our researchers and trainees as well as the collective efforts of many public and private organizations. It is through the building of human capacity and infrastructure, and the leveraging of expertise and resources, that Alberta will be best able to address the health needs of Albertans, both now and in the future.

HEALTH RESEARCH AND INNOVATION (R&I) IMPACT HIGHLIGHTS (2016-17)



Catalyzing Health R&I

FROM DISCOVERY
TO IMPACT

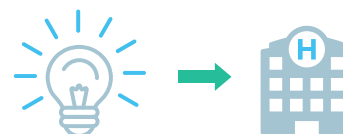
\$88.8 MILLION IN
ANNUAL INVESTMENTS*



Almost
571
RESEARCH PROJECTS
to test new ideas and
address health challenges

Collaborating to accelerate health R&I

36 INDUSTRY
PARTNERS



Moving **research and innovation**
into practice with Alberta Health
Services



74% of our researchers **engage & partner**
with industry & end-users

Making R&I easier to do in Alberta

Creating a stronger patient voice



Providing **real time**
information about
Alberta clinical trials

Improving
access to
health data
by providing
access to

51
HEALTH
DATABASES

Enhancing health and wellbeing

Research impacts improving health:

82%
quality
of care



9%

health
status

9%

determinants
of health

Growing our economy



2795

knowledge-based
workers supported



follow-on funding leveraged by
our funded research projects



leveraged by Alberta Innovates
for our partnered projects

*The reported results are a sample of key investments

INTRODUCTION

Alberta Innovates was consolidated into a single research and innovation (R&I) organization in November 2016 by bringing together the four former Alberta Innovates' agencies (Bio Solutions, Energy and Environment Solutions, Health Solutions and Technology Futures). Early in 2017, AI undertook a comprehensive review of all programs to inform strategic planning and a consolidated vision for the new organization. The new Alberta Innovates aims to help drive long-term economic growth and diversification in the province, enhance environmental, health and social prosperity for Albertans, and improve the effectiveness and efficiency of Alberta's R&I ecosystem. Now under one roof, the collective assets of the former agencies – cross sectoral knowledge and expertise, funding, networks and research facilities – can be more easily accessed by innovators, businesses and researchers.

Within Alberta Innovates, Health Innovation supported R&I in 2016-17 to improve the health and wellbeing of Albertans and create health-related social and economic benefits through innovation. Health Innovation recognized that the way diseases are managed often creates a burden on the acute care system. Reacting to illnesses in an emergency or hospital setting is often too late and extremely expensive. With the rise of chronic disease in our population, efforts are needed in preventative medicine, primary care, and to address social determinants of health. Although there are many approaches being used to tackle these challenges, Alberta Innovates' approach is innovation. This is a critical component to advancing the transformation of the health and health care system to address better patient outcomes and cost efficiencies.

From a broad perspective, in 2016-17 Alberta Innovates helped grow the health sector in Alberta and assisted in building a seamless innovation system from discovery to impact within and beyond the province. We worked with partners to ensure the province had a clear path for innovation, along with providing patients the best care for the best value. In terms of growing the health sector, one aim was to create more jobs, diversify the economy and give Albertans prime access to cutting-edge health technologies. Companies that can validate their technology with real-world data will be well positioned to enter a global market place where the challenges are similar to what is faced in Alberta. The 2016-2017 impact report is a summary of investments in research and innovation made by Alberta Innovates - Health Solutions.



Health Innovation addressed specific needs such as shifting from acute care to community care and leveraging increased patient knowledge and empowerment in direct care. Technologies that we helped develop support both of these outcomes. Key areas of investment and activity for Health Innovation were:

- Funding support for health R&I to develop highly skilled people, new health care treatments and improvements in health, and demonstrate new models of care delivery;
- Partnering with the medical device industry to demonstrate new approaches to care;
- Accelerating innovation into care with small and medium-sized enterprises (SMEs);
- Linking health systems with SMEs to co-innovate solutions to address real-world health problems with industry; and
- Coordinating and integrating Alberta's R&I system through the establishment of provincial platforms and collaborative partnerships that:
 - » Increase the quantity and quality of patient-oriented research;
 - » Facilitate high quality, integrated and efficient clinical research;
 - » Provide a streamlined, effective, collaborative and integrated model for ethics review of human health research;
 - » Conduct ethical review of cancer and community-based clinical trials and health studies and ethics in projects and assessments; and
 - » Put secondary health and health-related data to work.

The support that Alberta Innovates provided through Health Innovation helps enhance the science knowledge base in Alberta. It was used to train, attract and maintain leading researchers in Alberta, and conduct high quality R&I projects focused on addressing the needs of the population. The application of this knowledge through clinical guidelines, health-related policies, product development and various processes and services assists in improving the health and well-being of citizens. Health Innovation actively aimed to accelerate and enhance this application by serving as a user-driven catalyst for change that brought knowledge producers, entrepreneurs, industry, and the health system together.

This report aims to provide an overview of the achievements made through the support and activities of Health Innovation in 2016-17 as it contributes to Alberta Innovates' vision of being indisputably recognized as a leader – provincially, nationally and internationally – in catalyzing R&I in Alberta.

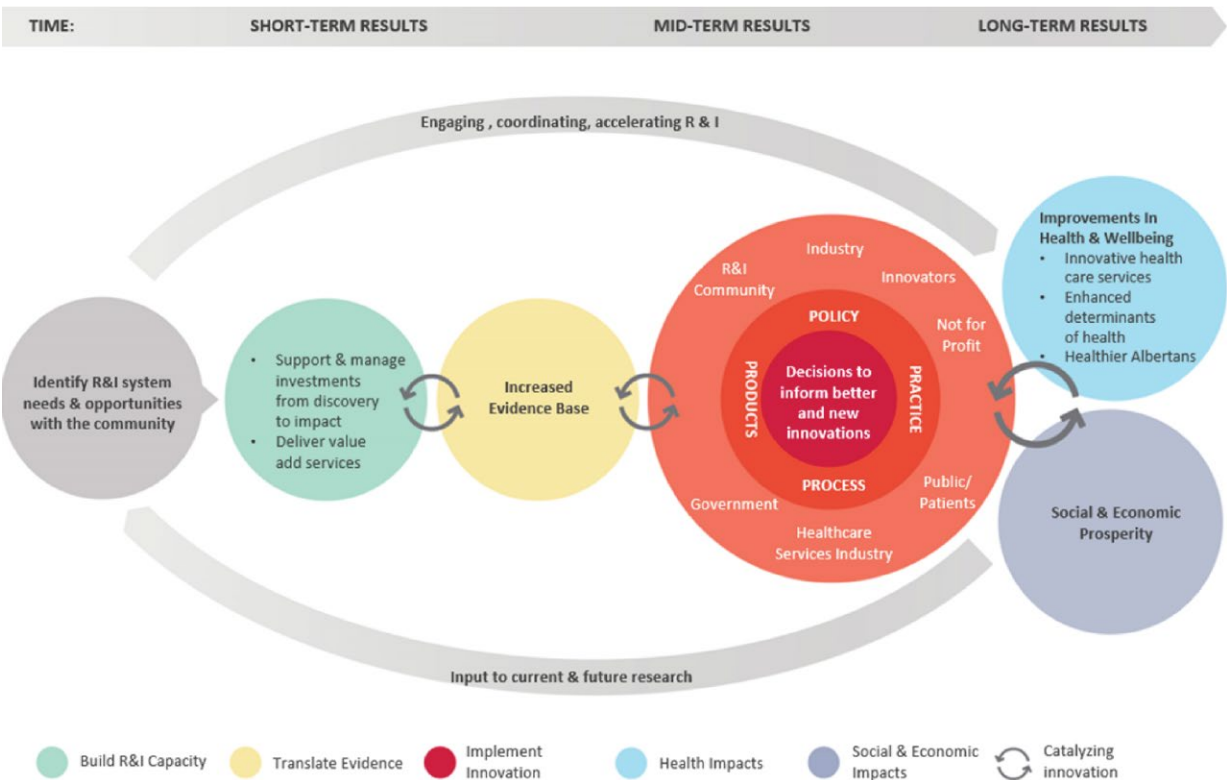
Measuring Achievements

The outcomes (and more distal impacts) of Alberta Innovates’ support and activities are not always immediately apparent. This is because a sufficient period of time needs to pass between the time research and others activities are initiated; when the knowledge, supports or products are produced; and when these can actually be applied. Once applied, additional time lags are often experienced before the new policies, products, services or practices can be adopted (i.e., used) and diffused, thereby achieving impacts.

Given these time lags, impact pathways are important tools that illustrate how R&I intends to achieve outcomes and impacts. By monitoring progress along the pathways, Alberta Innovates and its stakeholders are able to better appreciate how Alberta Innovates’ supports and services achieve incremental progress and contributions towards a stronger, more robust R&I ecosystem in Alberta and the improved well-being of our people and our province.

The figure below illustrates the impact pathways developed for Health Innovation. It highlights the importance of building R&I capacity in Alberta to increase the health-related knowledge and evidence base. More importantly, it shows that innovation is necessary to move advancements in knowledge into real-world changes that improve our health, well-being and economic and social prosperity.

FIGURE 1
Impact Pathways for Health Innovation



Health Innovation Strategies

In 2016-17, Health Innovation used three strategies for achieving impact. These strategies— strategic investments, provincial platforms, and partnerships and collaborations – were complementary and additive in nature, with one activity contributing to the success of another. In addition to these, Alberta Innovates supported R&I initiatives administered through other organizations. The achievements of these initiatives are beyond the scope of this report as they are reported by the administering organizations.



Strategic Investments

Our strategic investments in 2016-17 provided funding support to collaborative, multidisciplinary R&I activity in priority areas that ranged from the lab to the bedside to the community. Several of our strategic investments were expanded by working with partners in several sectors and included, but are not limited to, collaboration with:

- A funding partnership with Alberta Health Services (AHS) to support the activities of the Strategic Clinical Networks (SCNs) focused on improving patient care and value for money in the province's health system;
- Merck Canada and AHS to improve access to high quality care for aboriginal mothers;
- The Canadian Red Cross and the Canadian Institutes of Health Research (CIHR) to build on Canada's emerging expertise in disaster medicine and health research responses; and
- The College of Licensed Practical Nurses of Alberta (CLPNA) to advance knowledge in practical nursing.

Provincial Platforms

Health Innovation also invested in several provincial platforms to assist researchers and innovators in overcoming support and service challenges. By fostering enabling systems that support discovery and mobilization of knowledge into practice during the earlier stages of the impact pathway, Alberta Innovates increases the success of research and accelerates new knowledge and its applications into care.

Key focus areas for provincial platforms have been integrating and making available secondary use health data; enabling research and care that puts the 'patient-first'; streamlining processes for ethics review; and enhancing high quality, efficient and integrated clinical health research. These platforms and the diverse connections that underpin them optimize the ability of our health R&I system to identify and respond to Albertan's health needs.

Collaborations and Partnerships

Further along the pathway to impact, Alberta Innovates actively worked through partnerships and collaborations to accelerate the process of putting health solutions into practice, and in turn, serve the needs of Albertans. This included brokering linkages that bring different organizations and people together to jointly overcome barriers within the life sciences innovation system. In addition to pooling expertise and leveraging resources, these linkages also stimulate the exploration of cross-sector opportunities to expand and optimize the use of research findings and achieve health, social and economic impacts. These partnerships and collaborations assist in attracting additional investments to Alberta to support innovation, foster new innovative technologies and solutions and contribute to the creation of a thriving health sector that promotes economic diversification.

To translate research into solutions, Alberta Innovates collaborated with partners in the health system, publicly-funded post-secondary institutions, SMEs, multinational enterprises (MNEs), government and others. These collaborations and partnerships also assist in targeting solutions to meet the identified needs of the health system and to create an environment for innovation that will make a difference in the lives of Albertans.^a

^a This report does not include all of Alberta Innovates' industry partnerships and collaborations. Within Health Innovation, some recently implemented industry partnerships and collaborations were excluded as it is too early to report on their progress, outcomes and impacts.

PROGRESS TO IMPACTS

In 2016-17, the progress and achievements of 363 grants and awards were monitored through self-reporting using Researchfish^b and are reported in aggregate herein. This report also includes insight into other investments made by Health Innovation during that time and monitored using other mechanisms.

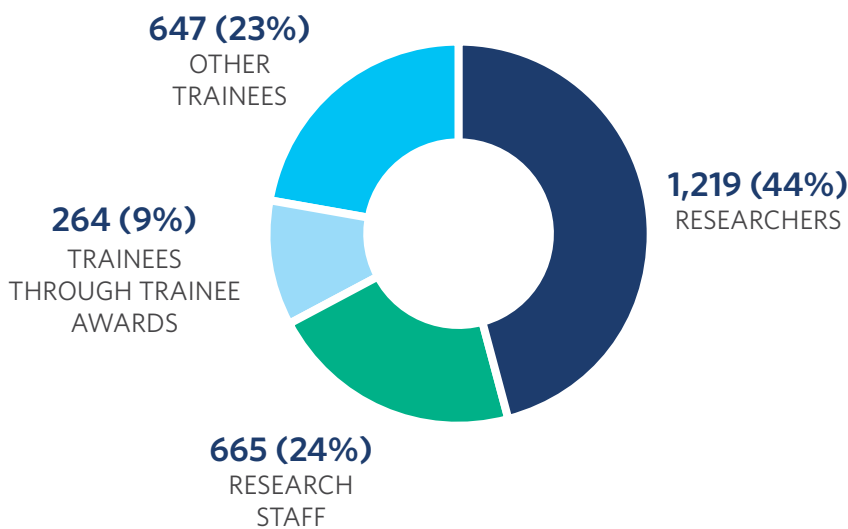
Building Research and Innovation Capacity

Strategic Investments

Our strategic investments contributed to Alberta’s strong science knowledge base by supporting human capacity within the province’s R&I ecosystem. This support assists individuals or groups in developing higher skill levels and enhancing their abilities to meet continued and emerging health needs within and outside of Alberta.¹ In 2016-17, grants and awards provided through Health Innovation directly or indirectly supported 2,795 researchers, research staff and trainees (Figure 2). This was an 11% increase relative to 2015-16.²

FIGURE 2
Building Human Research Capacity

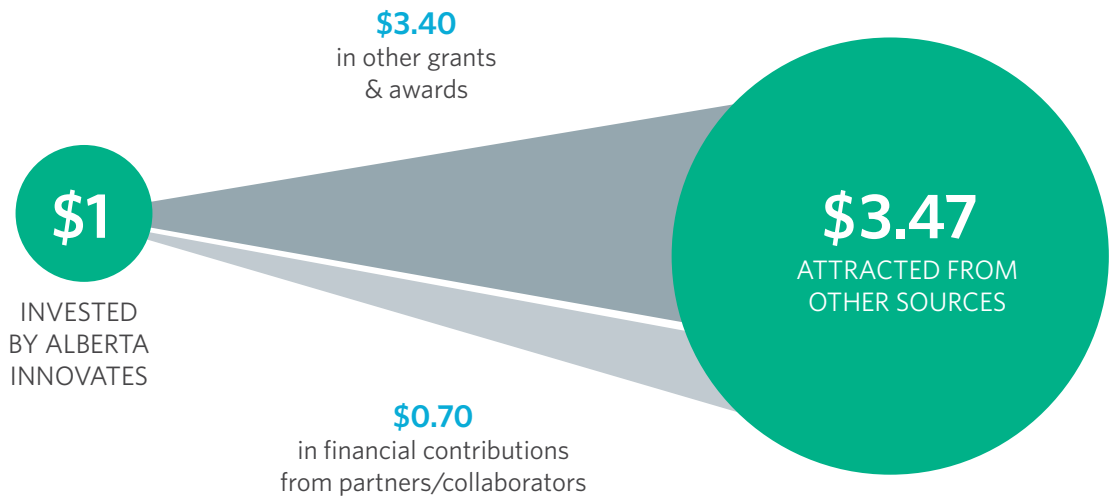
Directly and indirectly supporting 2,795 researchers, trainees and research staff



^b This represents 64% of the grants and awards managed by Health Innovation in 2016-17. Those excluded from reporting in Researchfish included some legacy grants and awards as well as funding such as travel and conference grants, transition funding, etc..

The high calibre of researchers and trainees supported by Alberta Innovates is broadly recognized. This is exemplified by the additional investments that they attract and by the awards and recognitions they receive. Together, researchers and trainees (collectively referred to as “investigators” herein for brevity) supported by Health Innovation attracted \$166.2 million in additional funding from other sources in 2016-17. Nearly \$162.9 million of this was through successful grant and award applications and the remainder was direct financial contributions from collaborators/partners.^c This equates to an additional \$3.47 in financial support for every \$1 invested in them through Alberta Innovates during that period (Figure 3), an increase of \$0.29 for each dollar invested relative to 2015-16.^d Overall, researchers attracted nearly 23 times more in additional funding than trainees and the average value of additional funding per researcher was 61 times higher than that of trainees (Table 1). CIHR, which pledged or provided \$99.8 million through 79 individual grants and awards, was the largest single contributor of additional funding to investigators (Table 2).

FIGURE 3
Growing Alberta Innovates’ Investments



^c Approximately 10% of collaborations/partnerships were reported to provide direct financial contributions. However, this proportion and the value of direct contributions is likely underreported as contractual confidentiality agreements limits reporting by 30 (3.6%) collaborations/partnerships.

^d Invested by Alberta Innovates through the 363 grants and awards monitored through Researchfish.

TABLE 1
Additional Funding Acquired by Investigators*

	TYPE OF INVESTIGATOR		
	Researchers	Trainees	Total
No. of grants and awards funded by Health Innovation	99	264	363
# (%) with additional funding	57 (58%)	86 (33%)	143 (39%)
Additional funding through non-Alberta Innovates grants and awards (in \$1000s)	\$156,028	\$6,846	\$162,874
Average funding per investigator (in \$1000s)	\$1,576	\$26	\$449
Additional funding per \$1 invested by Alberta Innovates (Health Innovation)	\$4.80	\$0.44	\$3.40

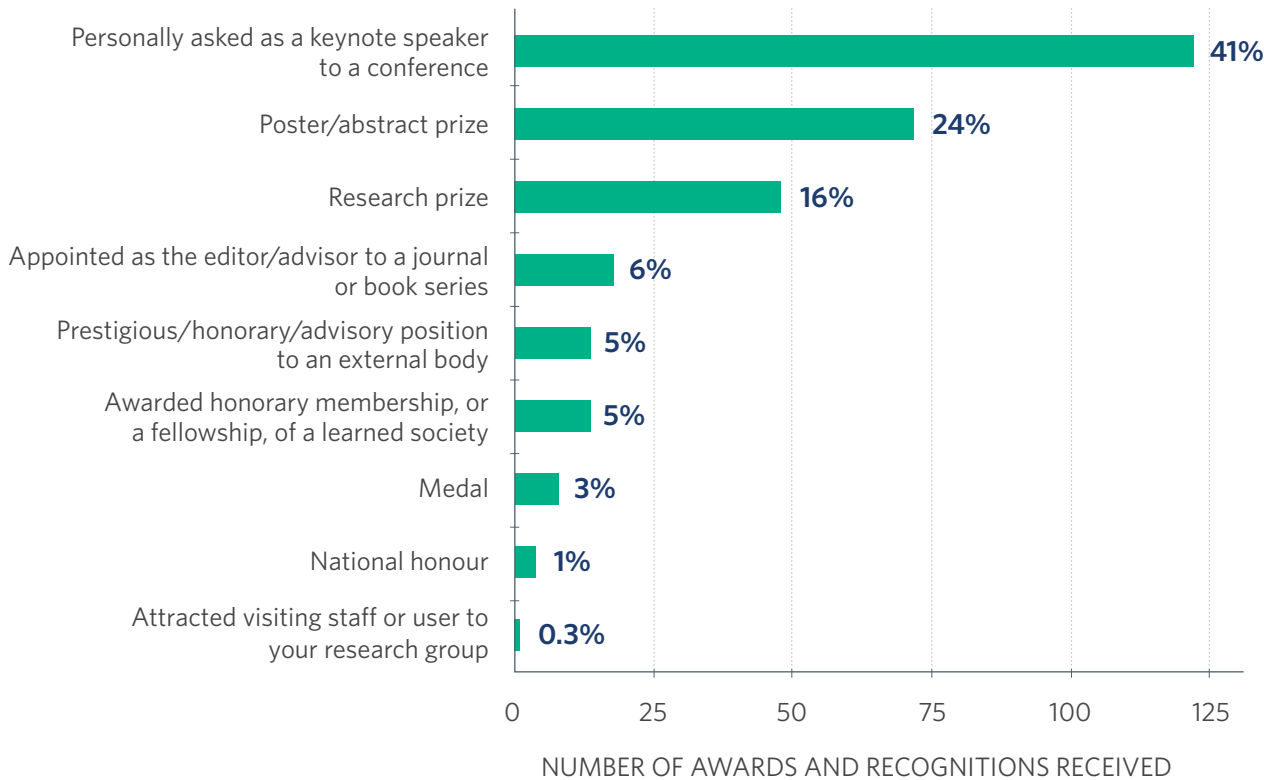
* Excludes direct financial contributions from collaborators

TABLE 2
Top Sources of Additional Funding

	Additional Funding Pledged to or Received by Investigators (in millions)	Number of Grants or Awards
Canadian Institutes of Health Research (CIHR)	\$99.8	79
NoNo Inc.	\$15.4	1
Canadian Foundation for Innovation (CFI)	\$11.6	4
National Institutes of Health (NIH)	\$4.5	1
Natural Sciences and Engineering Research Council (NSERC)	\$2.7	16
University of Calgary	\$2.6	61
Canadian Centre for Innovation	\$2.4	1
Government of Alberta	\$2.2	5
Juvenile Diabetes Research Foundation	\$1.5	1
Stem Cell Network (SCN)	\$1.5	3
Other	\$17.1	\$276
Total	\$161.2	\$448

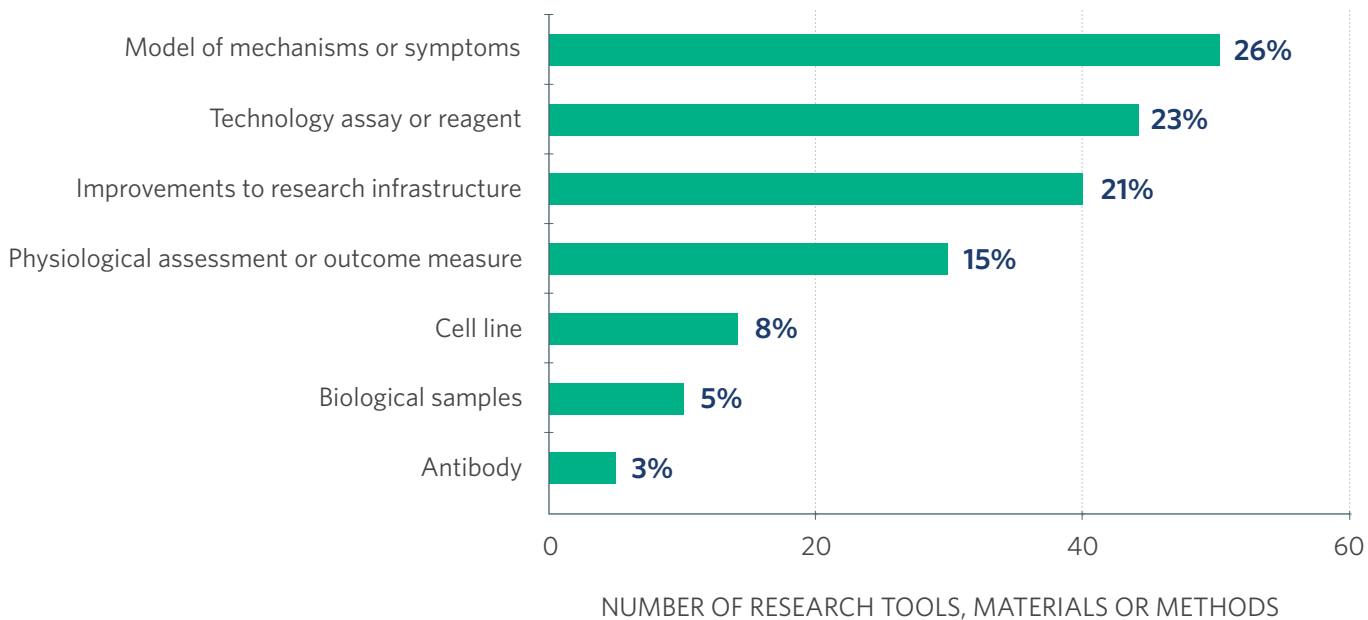
The investigators collectively received 301 awards and recognitions. Nearly 80% of these were personal invitations to be keynote speakers and research, poster or abstract prizes (Figure 4) and therefore also reflect opportunities in which investigators could share and advance the research supported by Alberta Innovates. Recognition of Alberta Innovates' investigators extended well beyond Alberta's borders with 40% and 37% of awards and recognitions being at the national or international level, respectively.

FIGURE 4
Awards and Recognitions Received by Investigators



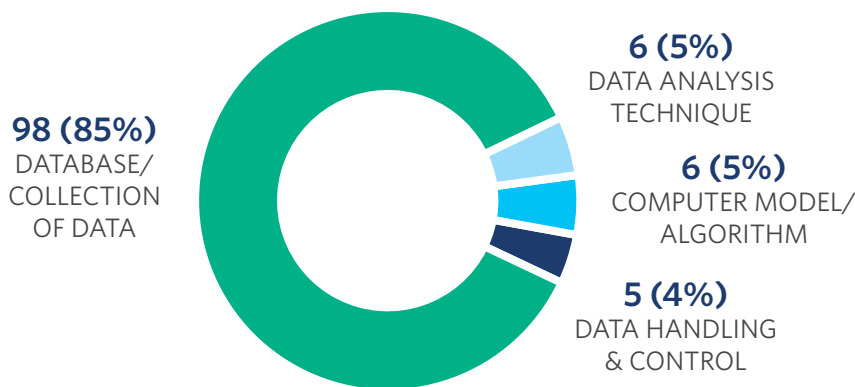
Novel research materials are sometimes created as a part of research in order to make new lines of enquiry possible. The grants and awards supported by Health Innovation generated 195 research tools and methods in 2016-17. Almost half of the research materials were models of mechanisms or symptoms and technology assays or reagents (Figure 5). Thirty-five percent of the research materials had been shared with others and this sharing most often occurred in the calendar year following the grant or award start year.

FIGURE 5
Types of Research Materials Created



Investigators may develop new databases, datasets or models during the course of their research that can make a significant difference to their research or that of others. Sixty-four (18%) investigators reported 115 such developments and these predominantly consisted of databases or the collection of data (Figure 6). The reach of Alberta Innovates' investments was indirectly enhanced through the sharing of 23% of the reported databases, datasets or models with other research groups. Nearly half (46%) of this sharing occurred two or more calendar years after the start year of the grants and awards.

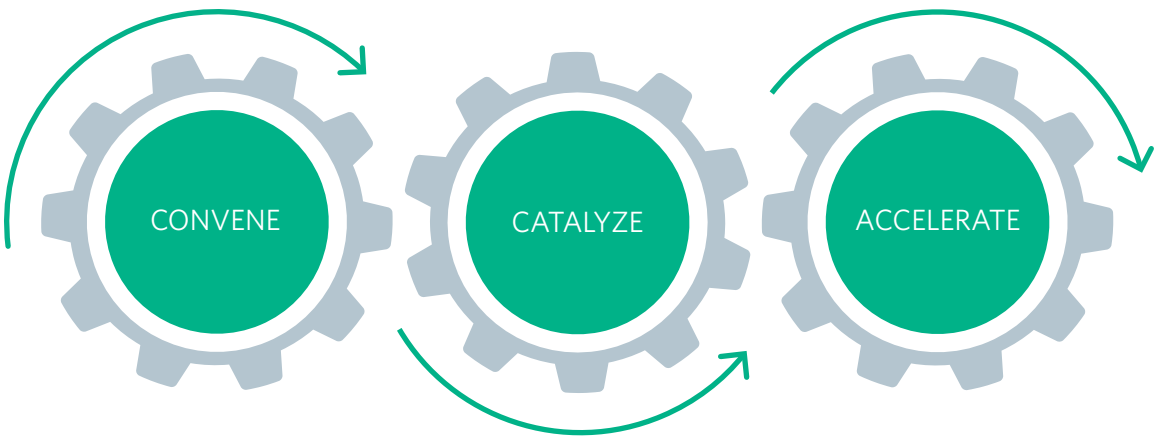
FIGURE 6
Types of Research Databases and Models Developed



Provincial Platforms

In addition to providing funding support, Alberta Innovates invested in multiple provincial platforms to help build research capacity in Alberta (Figure 7). These platforms assist in creating a more coordinated, integrated, efficient and productive R&I environment, one that reduces several common challenges and barriers experienced by researchers. One such platform is the Secondary Use Data Platform (SUDP) that began in 2015, a multi-phase project involving 17 partners and representing over 60 R&I stakeholders.^e This platform intends to bring together health and health-related databases to accelerate health research, support innovation and strengthen the health system. In doing so, researchers' access to research and quality improvement data will be improved and cost savings will be gained by the health system through reduced redundancies in the technology and databases that support research. In 2016-17, five collaborative projects were launched as Phase 2 of this initiative. These projects, three of which had anticipated completion in Fall 2017, were designed to identify system barriers, challenges and possible solutions to improve access to data.

FIGURE 7
Capacity Building for Change



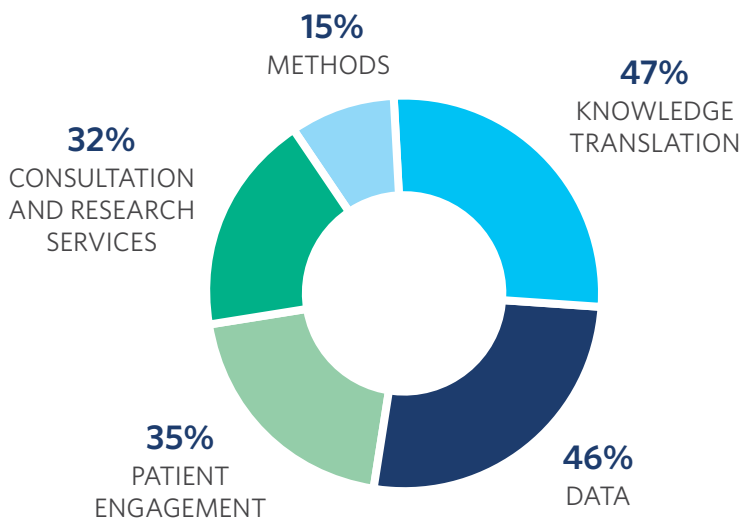
An integrated suite of services and capacity building initiatives that contribute to common outcomes

^e Information about SUDP is available at healthsolutions.ca/initiatives-partnerships/secondary-use-data-project

Patient-oriented research in Alberta and the Northwest Territories is being accelerated and its quantity and quality improved through the efforts of the Alberta SPOR SUPPORT Unit (AbSPORU).^f Launched in 2014 as a five-year \$48 million federal-provincial partnership between Alberta Innovates and the CIHR, this platform connects researchers, trainees and research teams with a network of training, expert advice and research services with a patient perspective. This enables new discoveries to happen faster because investigators are gaining more timely access to data, critical expertise and services. It also helps ensure that more researchers are listening and responding to patient priorities. This is important because patient-oriented research contributes to improvements in patients' health outcomes and health system experiences by ensuring the right patients receive the right care at the right time with the right information. In 2016-17, AbSPORU received 158 eligible requests for support (Figure 8) and 76% of these were for project support. It also reached 2060 participants and attendees through more than 60 training and capacity opportunities and produced 228 knowledge translation or communication outputs.



FIGURE 8
Nature of Support Requests Submitted to AbSPORU



^f Information about AbSPORU is available at healthsolutions.ca/initiatives-partnerships/spor

Through Health Research Ethics Harmonization (HREH) that started in 2010,^g Alberta Innovates is helping to accelerate the start-up of research by eliminating redundancies in the ethics review and approval process of human health research. This is being done by working in a close partnership with AHS, the College of Physicians & Surgeons of Alberta, Covenant Health, and the Universities of Alberta and Calgary to establish a streamlined, effective, collaborative and integrated model for human health research ethics review across the three Research Ethics Boards (REBs) designated under Alberta's Health Information Act. Thus far, this platform has established an agreed upon process for studies being conducted in more than one jurisdiction.

Another ethics platform provided by Alberta Innovates is the Health Research Ethics Board of Alberta (HREBA),^h one of the three REBs in Alberta. Established in 2013, HREBA Cancer Committee (HREBA-CC) reviews all cancer-related research in the province, HREBA Community Health Committee reviews research conducted by individuals who are not based at universities (i.e., community-based research), and the Clinical Trials Committee reviews clinical trials involving human subjects, or their information. Serving as a single point of review for all cancer-related studies in Alberta, HREBA-CC accelerates the start-up of research and produces administrative efficiencies by alleviating the need for researchers to obtain ethics approval from multiple REBs for studies being conducted in multiple sites. HREBA also has an agreement in place with AHS and Covenant Health that helps accelerate the approval process for researchers to use these organizations' resources (e.g., facilities, equipment, staff, patients or their records) for research purposes. This is achieved by eliminating duplications and producing greater efficiencies in the research approval process. Key achievements for HREBA are:

- Implementation of nationally accepted procedures and core working documents;
- Appointment and training of 55 committee members who conduct monthly review on HREBA committees; and
- Positive improvements in review timelines that see Alberta with a processing time that is three days quicker than the national average (i.e., 61 days compared to 64 days).ⁱ

^g Information about HREH is available at healthsolutions.ca/initiatives-partnerships/health-research-ethics/hreh

^h Information about HREBA is available at hreba.ca

ⁱ Based on information from the Canadian Cancer Clinical Trials Network (3CTN) whose network is focused on academic clinical trials.



Established in 2008, **A pRoject Ethics Community Consensus Initiative** (ARECCI) is an Alberta Innovates platform that provides support to project leads in assessing and addressing risks in non-research projects through the delivery of decision-support tools, training opportunities and an ethics consultation service.^j At the heart of ARECCI is the recognition that not all projects requiring ethics review need to be reviewed by a REB despite having an ethical risk that can be as great as those of research projects due to the involvement of people, their information, or its sensitive nature.³ ARECCI fills the gap of projects that do not require formal research ethics review yet need to incorporate ethics principles. Since its inception, nearly 17,000 individuals within and outside of the health ecosystem have accessed ARECCI's online decision support tools, including nearly 3,000 people in 2016-17. Since April 2014, ARECCI has conducted 56 ARECCI Project Ethics courses with 788 participants (1789 participants since 2009), five ARECCI Second Opinion Review courses with 22 participants and three Train-the-Facilitator courses with 10 participants. It has also completed approximately 150 Second Opinion Reviews and delivered 27 presentations to 869 attendees. To remain relevant and in response to demand, the Project Ethics course is now offered by distance and all curricular material is now electronic.

^j Information about ARECCI is available at healthsolutions.ca/initiatives-partnerships/arecci-a-project-ethics-community-consensus-initiative

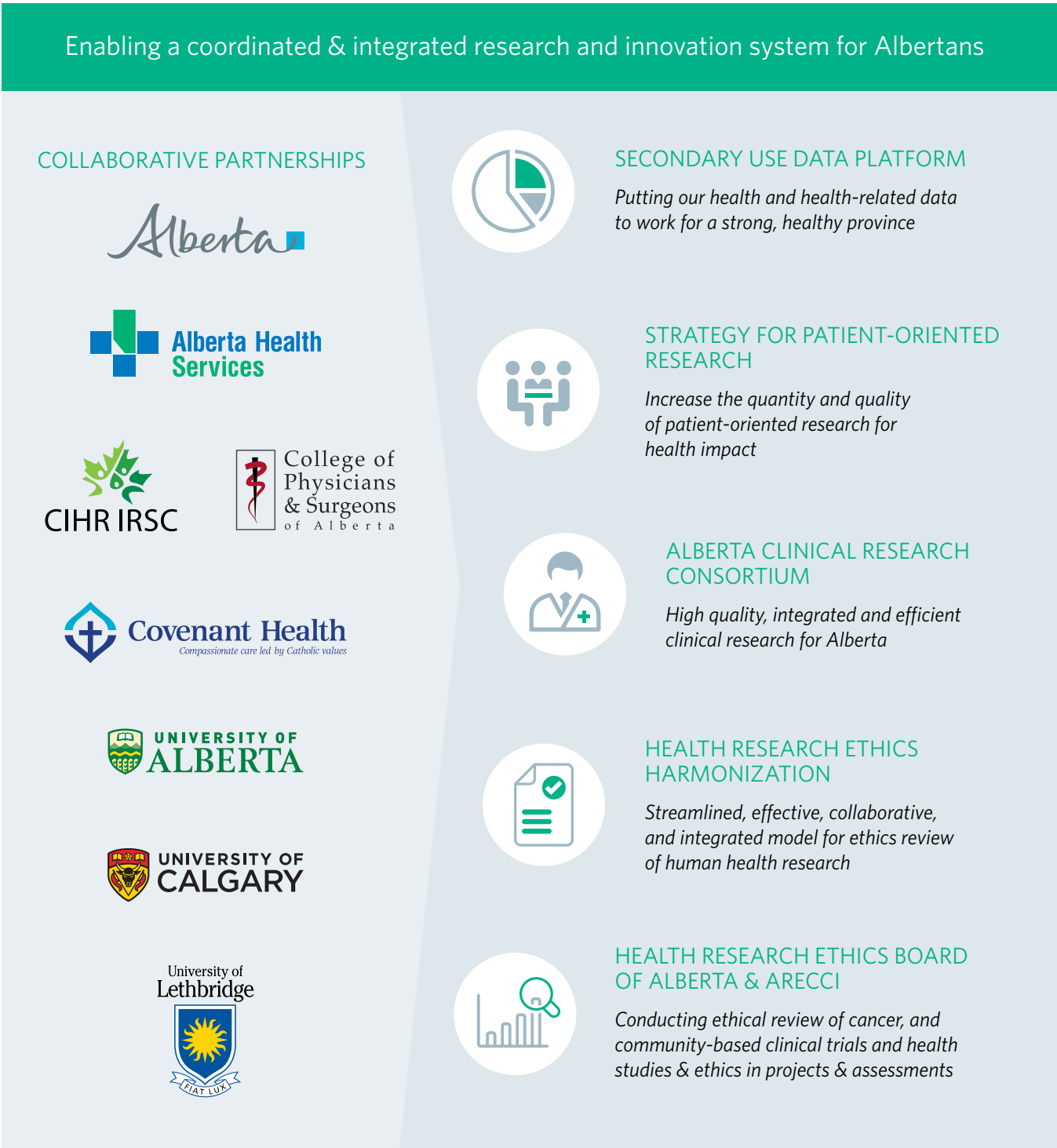


Managed by Alberta Innovates since its start in 2011, the Alberta Clinical Research Consortium (ACRC) is tackling barriers and building solutions to increase the efficiency of conducting clinical research and clinical trials in the province.^k This is being achieved through the efforts of the member organizations of ACRC – Alberta Innovates, AHS, the College of Physicians and Surgeons of Alberta, Covenant Health, and the Universities of Alberta and Calgary – in leveraging their expertise to collaboratively streamline processes and enhance the capacity and quality of clinical health research. Key achievements of ACRC to date include:

- Significant decrease in cycle times for the processing of administrative approvals across the province (e.g. from 150 days to 9 days for Research Agreements processed by AHS provincial research administration);
- Made more than 30 tools and templates publicly available to researchers for quality set-up and conduct of clinical trials/research;
- Supported capacity building through administration of provincial access to an online clinical health research training system;
- Created a Provincial Clinical Research Roadmap and developed it into an online interactive tool to assist researchers with setting up and conducting a study regardless of institutional affiliation;
- Sub-licensed and implemented a web-based clinical trial management system (EDGE) to AHS and Covenant Health to support setting up collaborations and the seamless exchange of information between leadership, administration, research and support teams assigned to a clinical study; and
- Developed and facilitated workshops, conference and training events to promote continuing education of researchers, coordinators and administrators.

^k Information about ACRC is available at healthsolutions.ca/initiatives-partnerships/acrc-alberta-clinical-research-consortium

FIGURE 9
Provincial Platforms

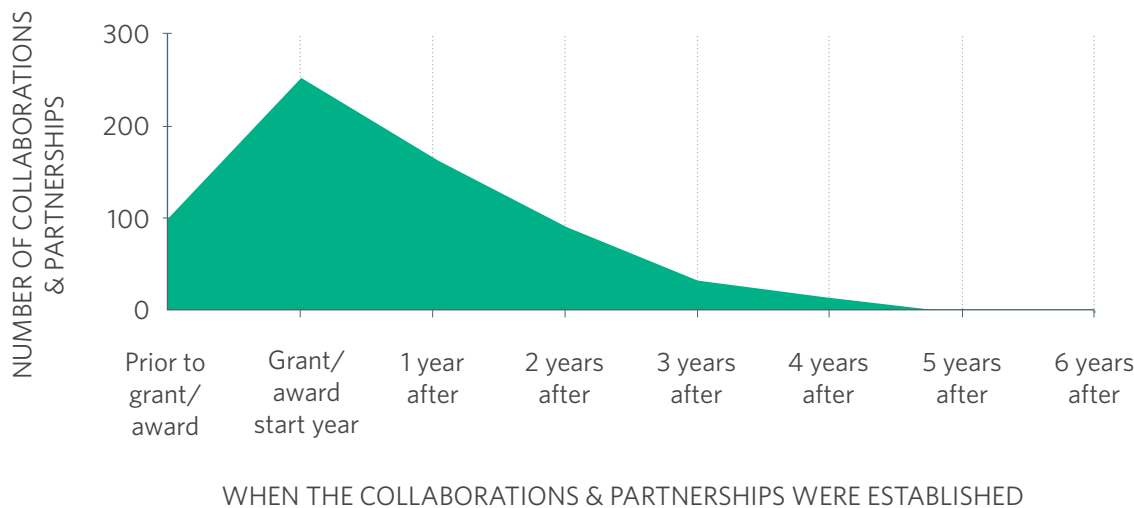


Translating Evidence

Researchers contribute to science, knowledge and better understanding when their findings and insights are shared with others. This sharing demonstrates progress along the pathways to impact but does not in itself constitute an outcome or impact. Rather, outcomes begin to occur after knowledge moves beyond the researchers in a way that guides the decisions and actions of innovators (e.g., policy and decision makers, practitioners, industry, service providers, other researchers, patients and the public). Three mechanisms through which research knowledge is shared are collaborations and partnerships, publications and engagement activities.

Collaborations and partnerships are often used to bridge the gap between R&I (i.e., the application of research findings to create meaningful changes in policies, practices, processes and products). These mechanisms provide opportunities to improve the relevance of research in relation to innovator and end-user needs and, in turn, can lead to accelerated and/or amplified adoption of research findings in the ‘real-world’. Collaborations and partnerships also assist in building capacity, creating a shared understanding through the exchange of information and advancing or accelerating research through the sharing of resources. Overall, 662 active collaborations and partnerships were reported by 161 (45%) grants and awards supported by Health Innovation. This represents an average of 4.1 collaborations or partnerships (SD 6.1) amongst those grants and awards. More than half of these collaborations and partnerships were established either prior to or during the start year of Alberta Innovates’ support, a finding that suggests that collaborators and partners had an opportunity to inform the research in its earliest stages. (Figure 10).

FIGURE 10
Timing of Collaborations and Partnerships
Relative to Grant and Award Start Year



Collaborations and partnerships often involve multiple organizations. As a result, there were 829 individual collaborators and partners – average of 1.3 collaborators and partners for each reported collaboration and partnership – from 31 countries (Figure 11). By and large, these collaborators and partners were located in Canada (76%) and, more specifically, Alberta (55% overall and 73% of those located in Canada) (Figure 12). The majority of collaborators and partners were in the academic or university sector and 10% were private sector organizations (Figure 13).

FIGURE 11
Collaborators and Partners Around the World

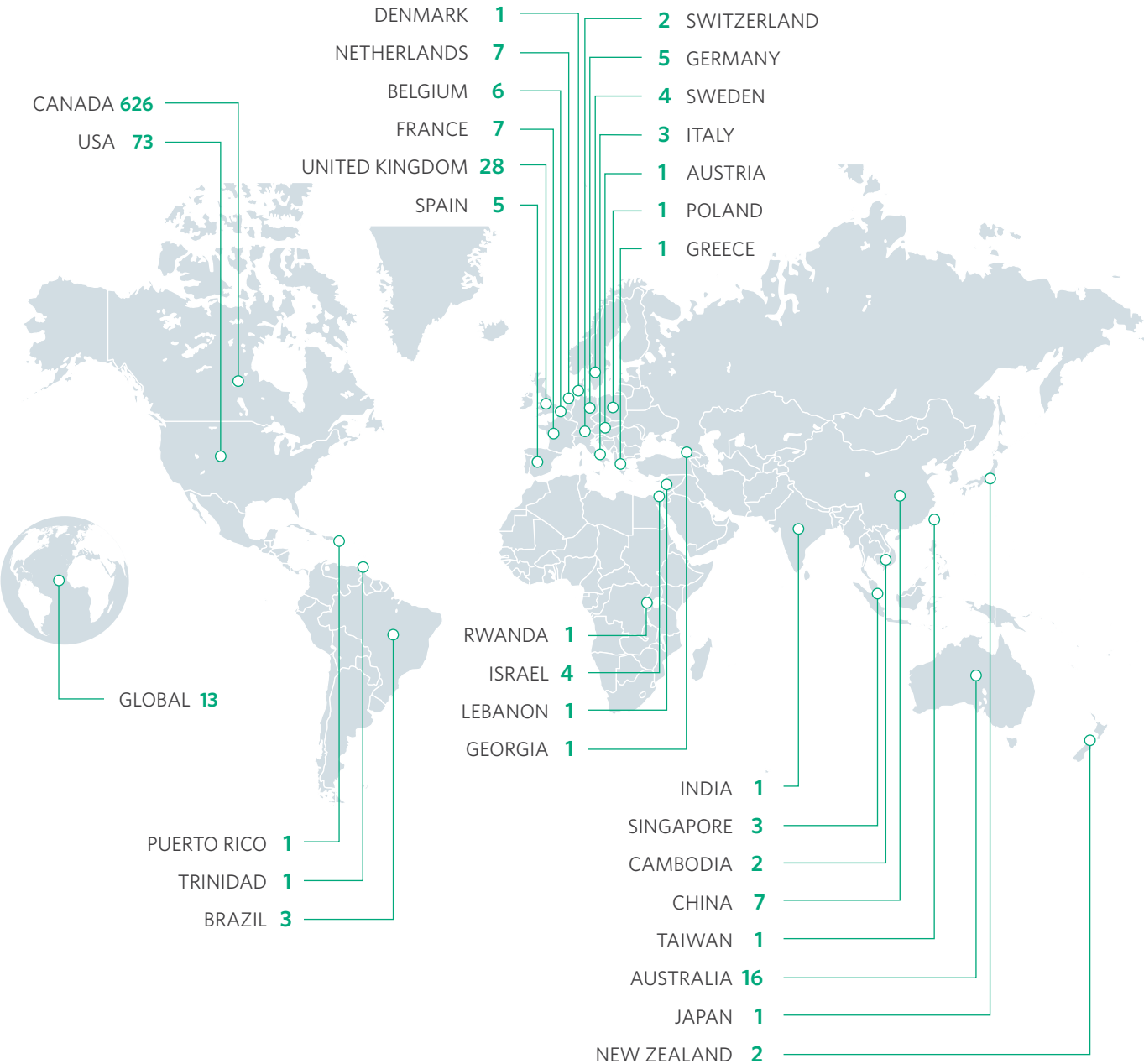


FIGURE 12
Collaborators and Partners in Canada

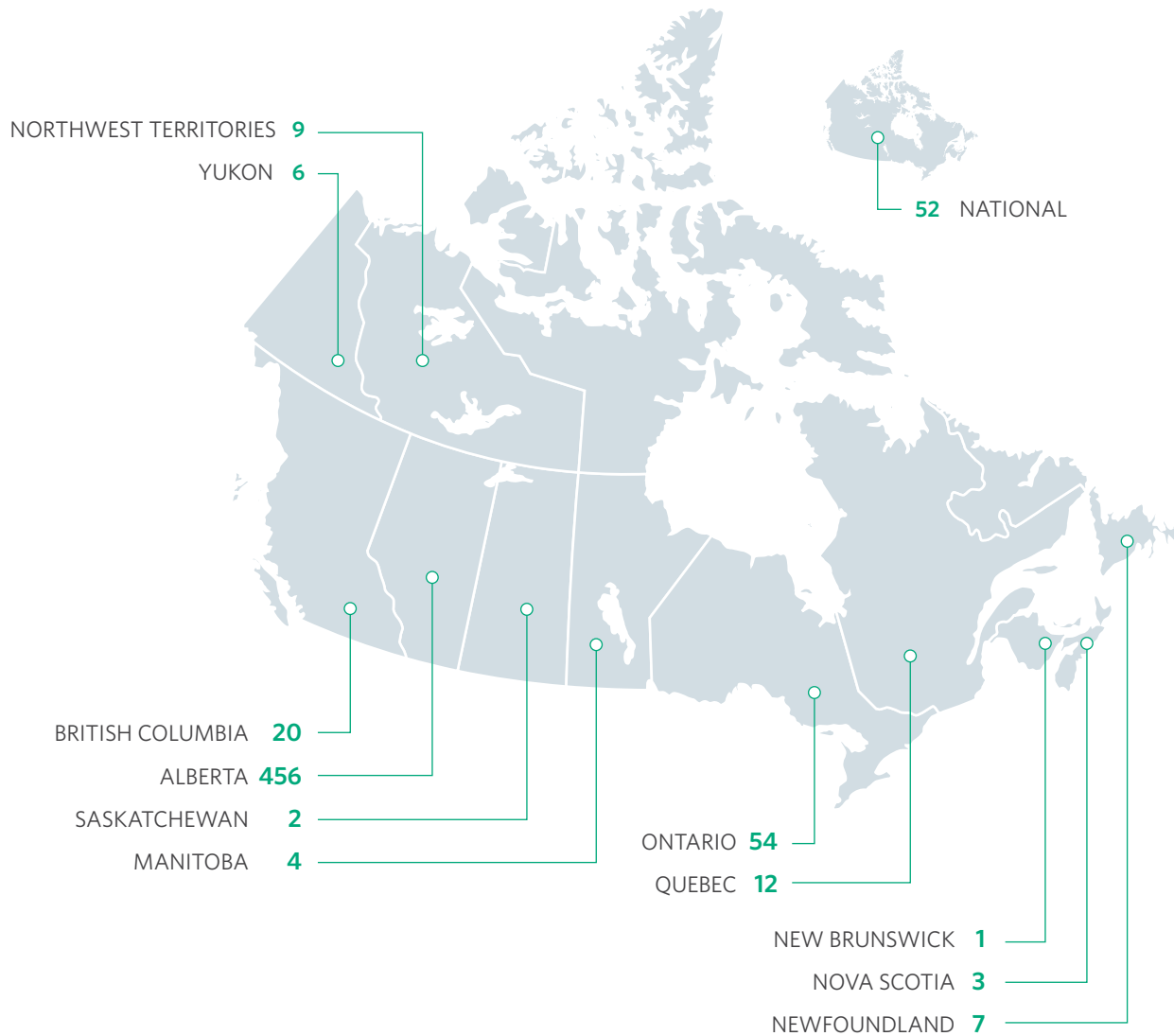
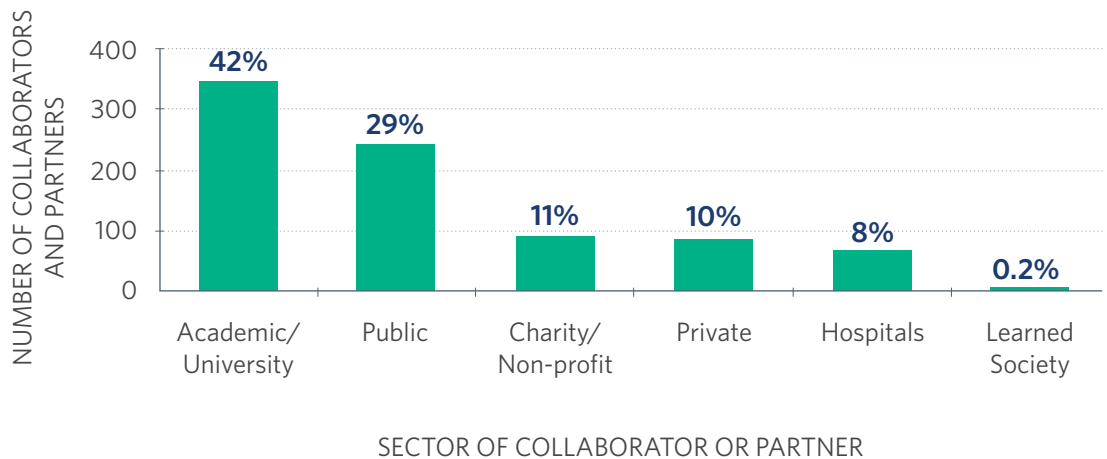
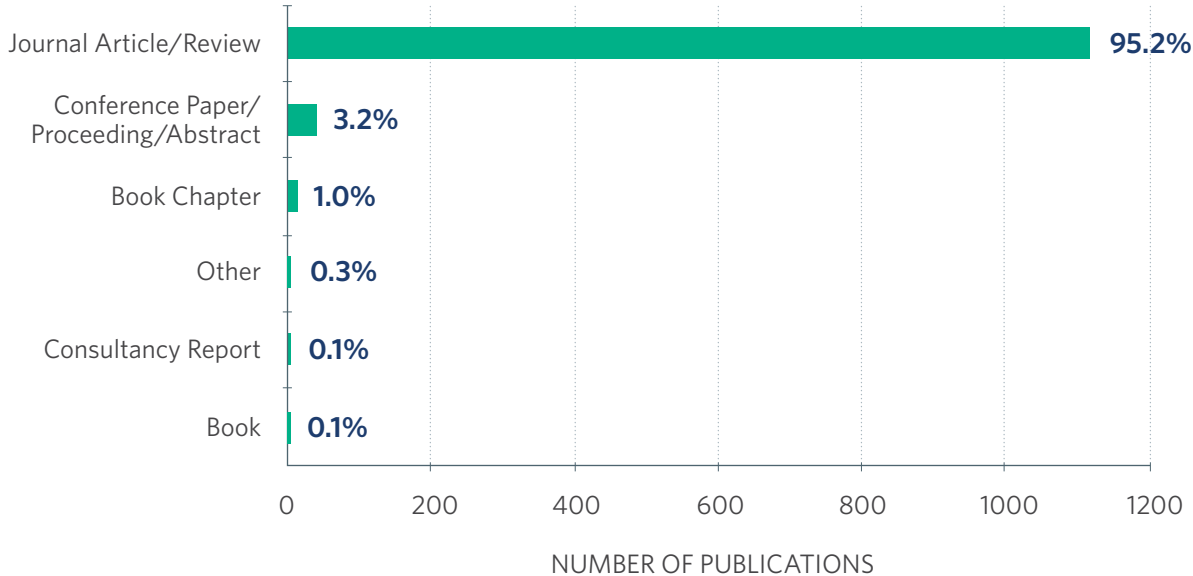


FIGURE 13
Sectors of Collaborators and Partners



Publications are one key means of increasing the science and knowledge base. Successful publication also draws attention to the investigators, their institutions and their funding sources and therefore is commonly taken into consideration for funding decisions and academic recognition or promotion. In 2016-17, 243 (70%) investigators contributed 1175 publications to the scientific literature and 1119 (95%) of these were journal articles (Figure 14). Amongst those who published, the average number of publications and journal articles per investigator was 4.8 (SD 11) and 4.7 (SD 11).

FIGURE 14
Types of Publications



Relevant and appropriate engagement activities – which are essentially the means through which researchers meaningfully involve a broad range of stakeholders in the research activities – are another important way of progressing research along the impact pathway. These activities can occur at any time throughout the research process depending on the purpose of engagement (e.g., to assist with the design of the research, to gather feedback on the findings, to communicate the research findings, etc.). Overall, 1638 engagement activities were completed in 2016-17 within 203 (56%) grants and awards, the average being 8.1 engagement activities per grant or award (SD 18.5). These activities, which were predominantly in the form of talks or presentations, were mainly conducted locally or regionally and were provided to professional practitioners (Figures 15 to 17). The most frequent known outcome of engagement activities was a change in views, opinions or beliefs as reported by the audience (Figure 18).

FIGURE 15
Types of Engagement Activities



FIGURE 16
Geographic Reach of Engagement Activities

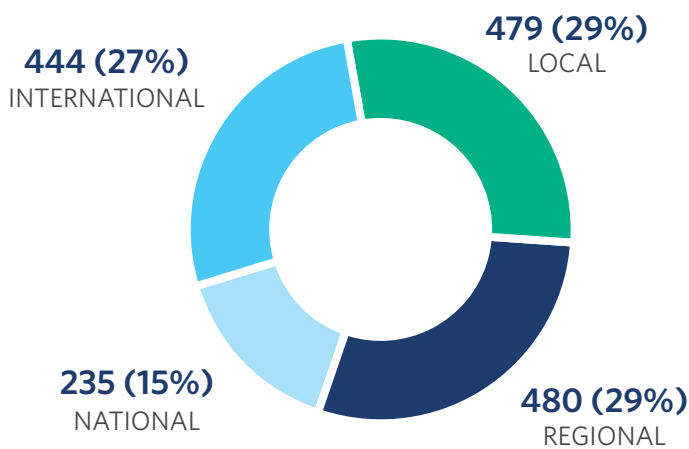


FIGURE 17
Primary Audiences for Engagement Activities

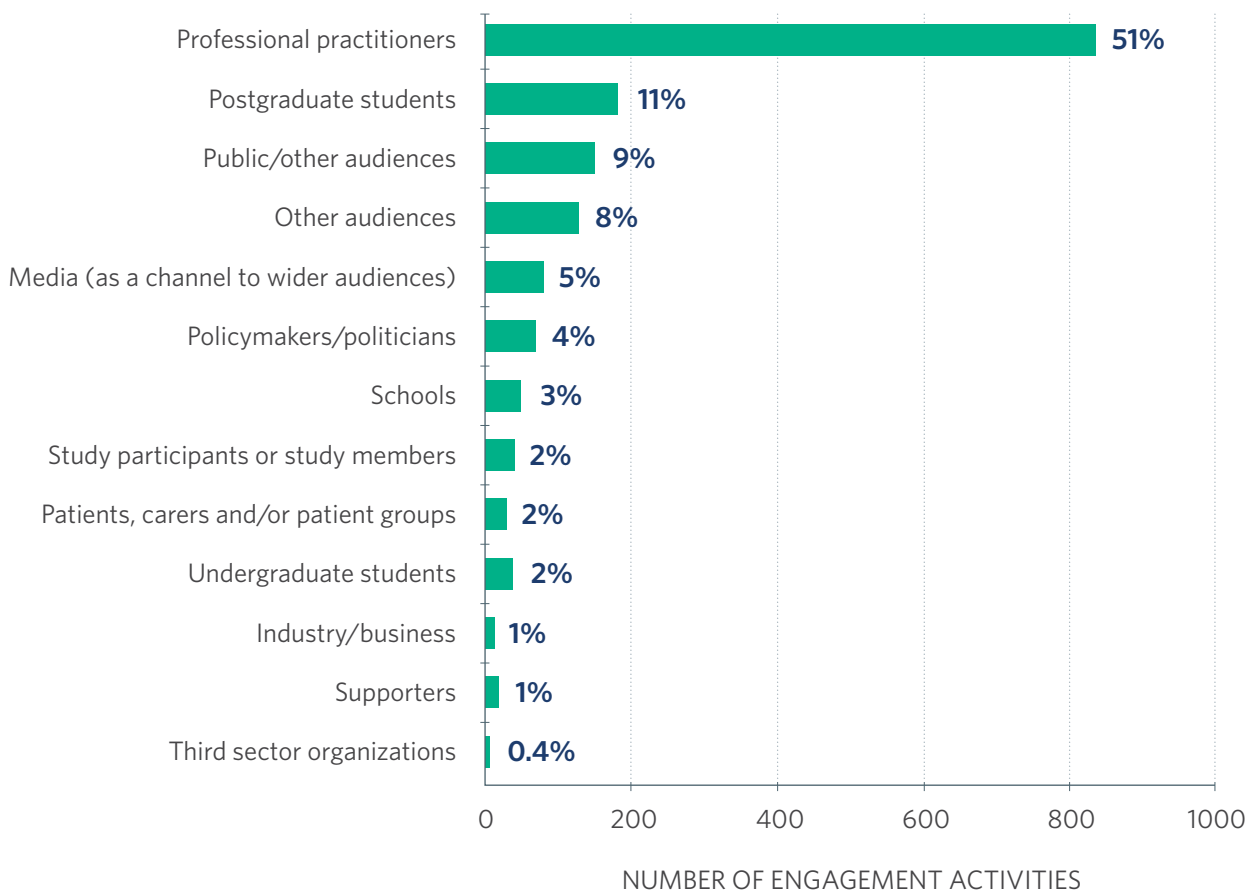
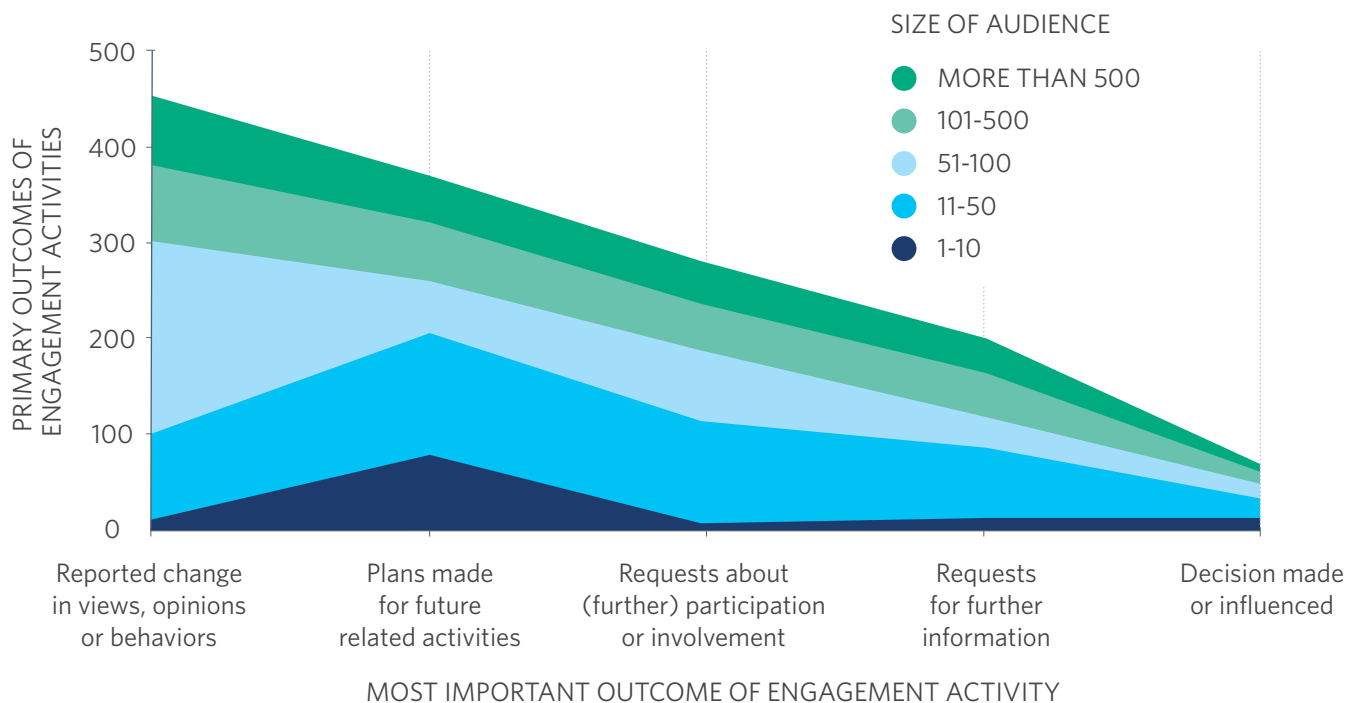
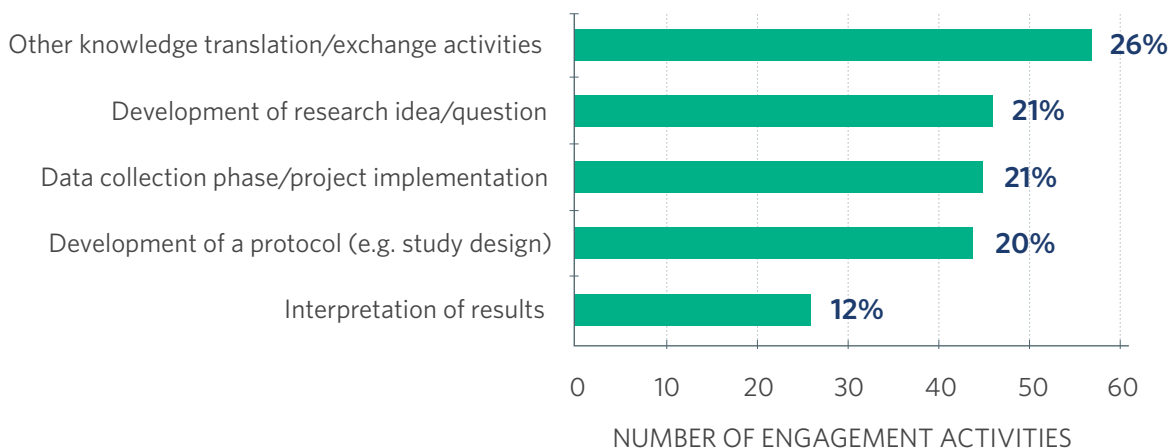


FIGURE 18
Primary Outcomes of Engagement Activities



Engagement activities with industry partners and end-users were further explored among researchers receiving support from Health Innovation (excluding trainee awards). Seventy-four percent of these grants and awards reported 218 engagements with these audiences. These engagement activities were most often done for the purpose of knowledge exchange or translation (Figure 19).

FIGURE 19
Purpose of Engagement Activities with Industry Partners and End-Users

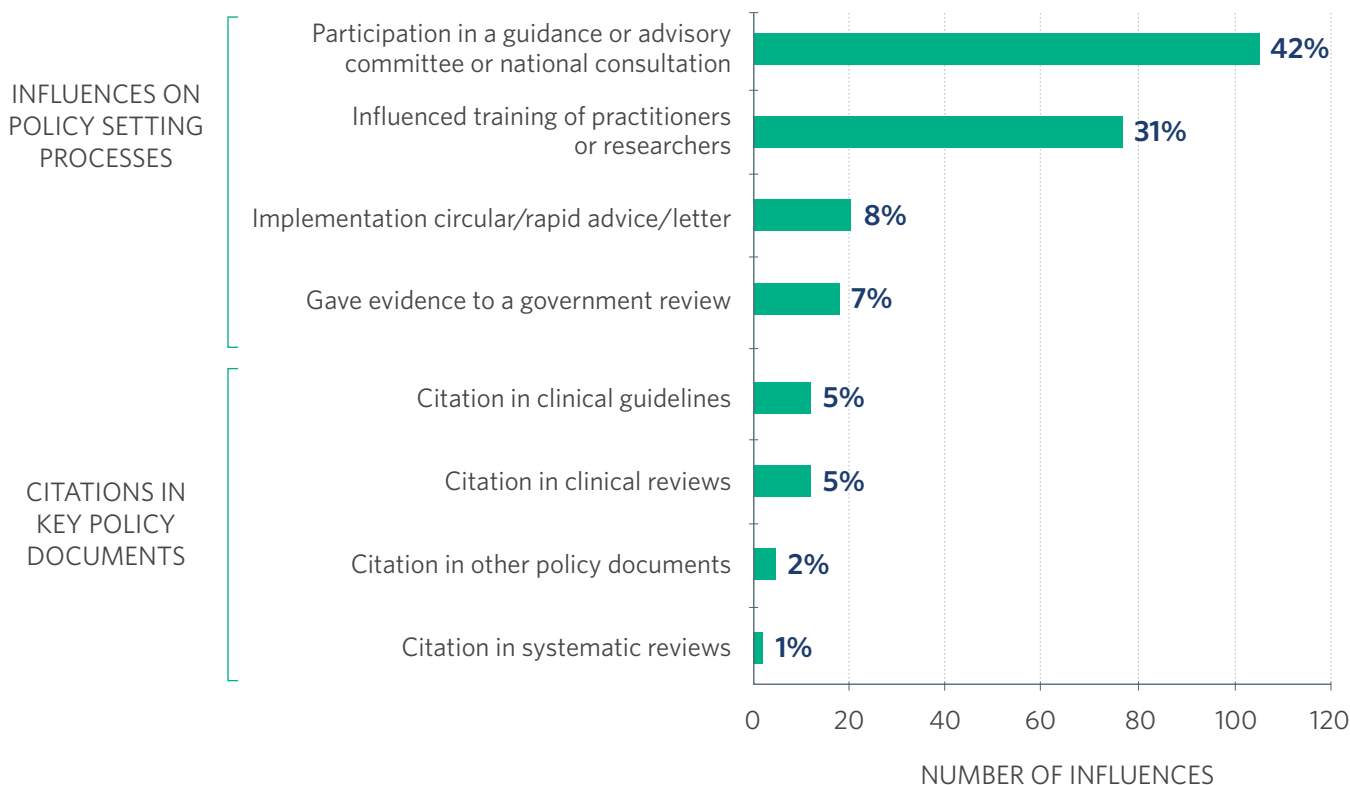


Enabling Decisions: Implementing Innovations

In the context of health, the intended purpose of enabling decisions is for health-related knowledge to be adopted and used by organizations or individuals to affect or create health or health-related impacts. To do so, knowledge must first be translated into various innovations that include new or revised policies, practices, products (including services) or processes. These in turn serve as the pathways to improvements in health and well-being.

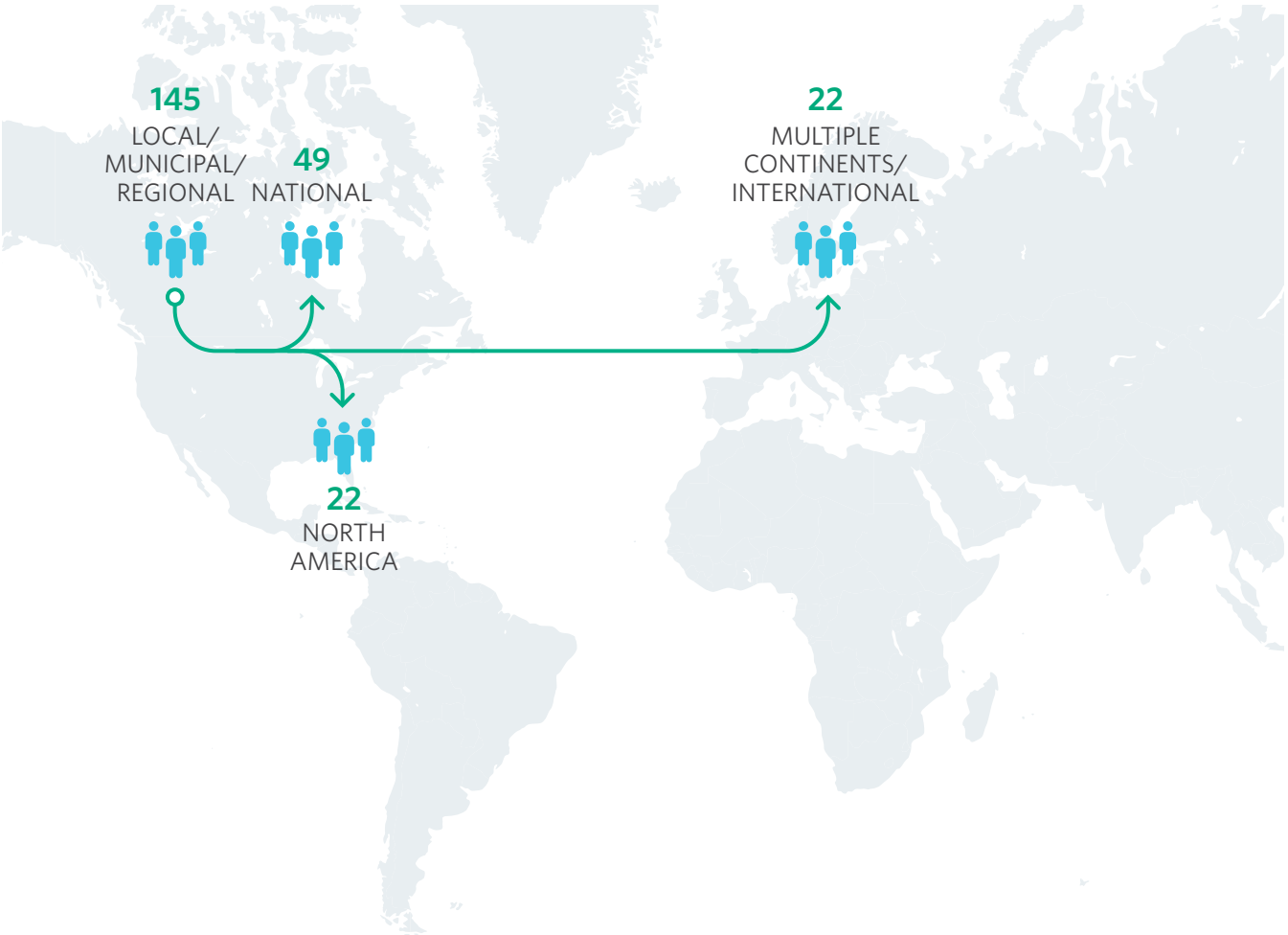
In 2016-17, 65 (18%) grants and awards supported through Health Innovation reported 251 influences on policy, practice, patients and the public. These grants and awards had an average of 3.9 influences (SD 4.6). Policy setting processes (88%) accounted for the vast majority of influences and these primarily consisted of participation in a guidance or advisory committee (42% overall) (Figure 20). The other major type of influence – citations in key policy documents – included citations in clinical guidelines within the healthcare areas of infection (25%), reproduction (25%), neurological (17%), cardiovascular (8%), respiratory (8%) and other (17%).

FIGURE 20
Types of Influences on Policy, Practice, Patients and the Public



The geographic reach of the influences on policy, practice, patients and public remained within Alberta 58% of the time (Figure 21). The influences most frequently remained within Canada when extending outside of the provincial borders. That the investigators knew the outcomes of 178 (71%) of these influences likely reflects this relative proximity in geographic reach. Of these, 56 (31%) were known to have no outcomes to date and the remainder had 175 outcomes (i.e., a single influence could produce more than a single outcome). As illustrated in Figure 22, the most frequent outcomes were changes in the efficiency and effectiveness of public service delivery and improvements in the educational and skill level of the workforce.

FIGURE 21
Geographic Reach of Influences on Policy, Practice, Patients and the Public



IMPACT EXEMPLAR

SAVING ATHLETE'S KNEES THROUGH AN INNOVATIVE ASSESSMENT PROTOCOL



A knee injury for an elite alpine ski racer can end their dream of Olympic gold. Matthew (Matt) Jordan, who recently completed a Graduate Studentship, has developed an innovative assessment protocol to minimize anterior cruciate ligament (ACL) injuries. The ACL is one of four main ligaments in the knee that help to connect the bones. A sprain or tear of the ACL can occur when there is an imbalance between the internal forces of the athlete's muscle system and the external forces coming from the sport environment. Athletes who participate in high demand sports like skiing, snowboarding, soccer, basketball and football are at high risk for ACL injuries. Injury to the ACL often requires surgery to regain full knee function and athletes frequently injure their ACL a second time after surgery.

Matt's method uses two instrumented plates to measure the force from the left and right legs during vertical jumping. This allows him to pinpoint weaknesses in leg strength that could increase the risk for ACL injury or a re-injury after an ACL surgery. Matt provides this information to the athlete's performance team who then develop an individualized injury prevention or rehabilitation training program for the skier. Restoring balance through physical training is critical to prevent injury and to obtain optimal function after a knee injury. The assessment protocol is easy to use and could be used by sport medicine professionals to benefit any individuals actively engaged in sports, not just professional athletes.

Matt works closely with the Canadian Alpine Ski Team. On average, this team of 20 skiers would have two to three ACL injuries per year. Since Matt began his research in 2012, the ACL injuries for skiers training inside the Canadian Team program have gone down dramatically. Matt's innovative protocol has been implemented at two Canadian national alpine ski training centres as well as centres in the United States, United Kingdom and Australia. In 2015, Matthew was awarded the Gord Sleivert Young Investigator Award at the 10th Annual Sport Innovation (SPIN) Summit. This Summit brings experts together with the goal of achieving Olympic and Paralympic success.

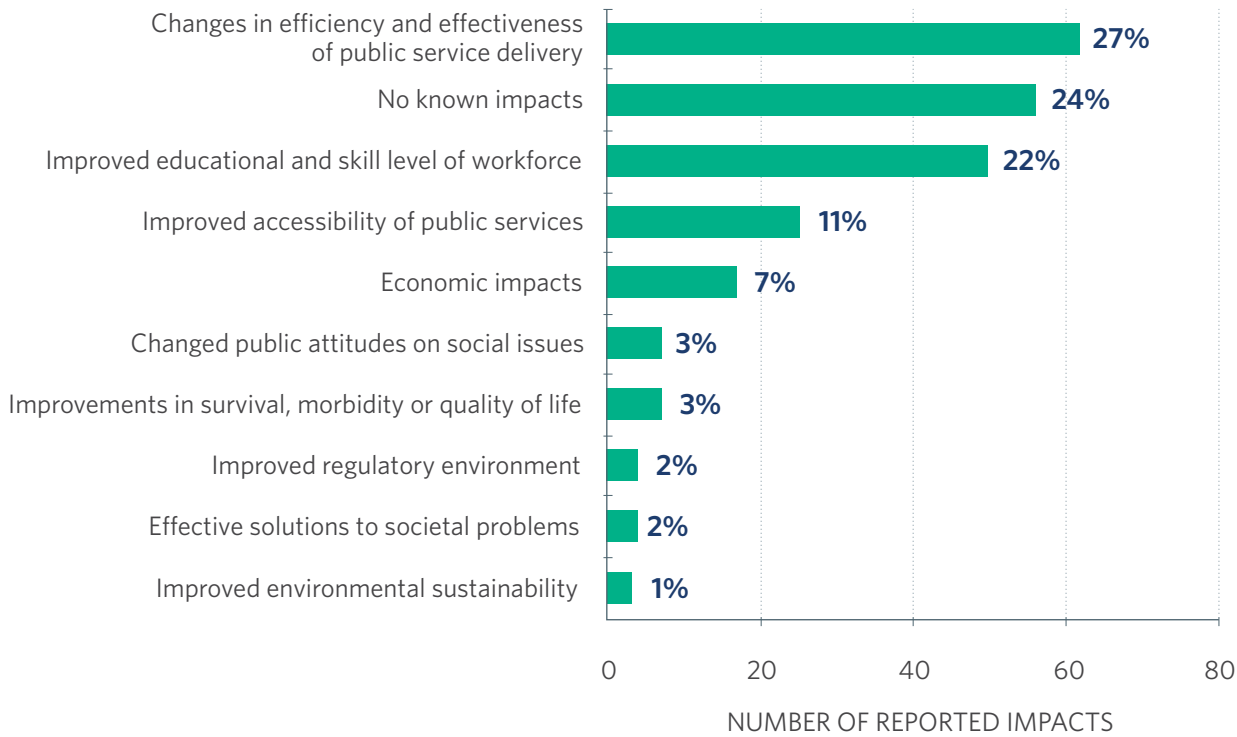


UPDATE 2017

Matt Jordan currently holds a Director position, Sport Science (Strength & Power/Mountain Sports), at the Canadian Sport Institute Calgary. His position involves technical mentorship of sport practitioners working with Olympic-bound athletes as well as research/innovation in the Canadian Sport Institute Calgary's Strength and Power Laboratory. Matt's research focuses on assessing athletes for performance and injury/re-injury prevention.

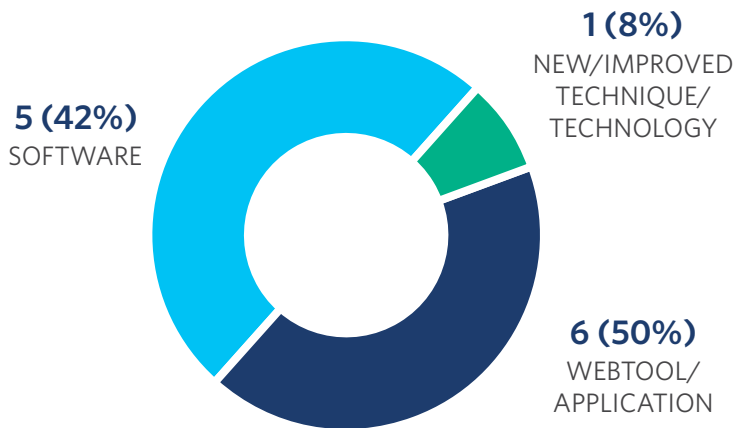
Matt is also an Adjunct Professor at the University of Calgary's Faculty of Kinesiology where he mentors graduate students and collaborates with other researchers who study human performance and injury prevention.

FIGURE 22
Outcomes of Influences on Policy, Practice, Patients and the Public



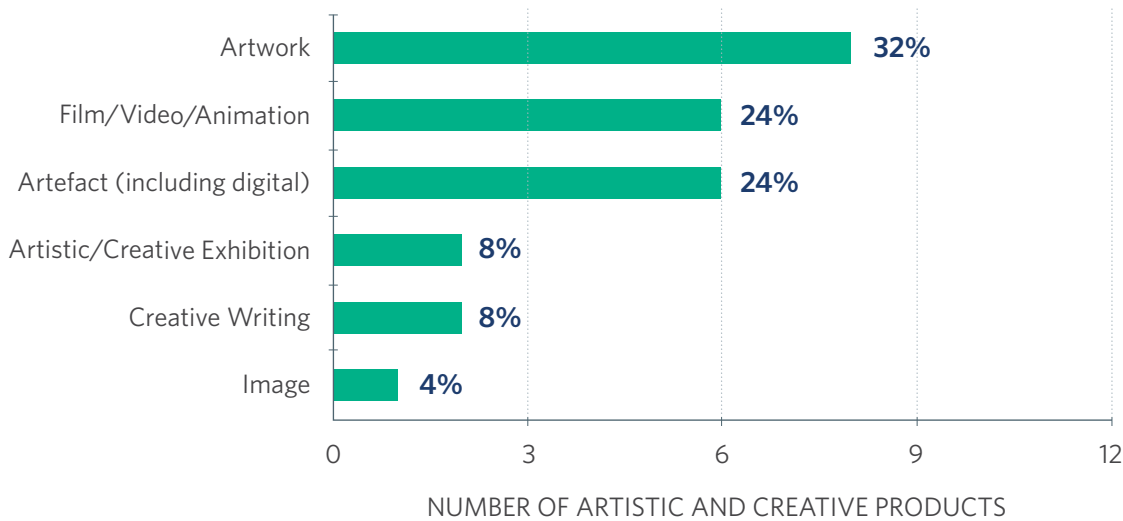
The 12 software and technical products developed through ten (3%) of the grants and awards represent or assist in informing better and new innovations (Figure 23). Three-quarters of these developments were realized within two calendar years following the start year of the grant or award.

FIGURE 23
Software and Technical Products



Artistic and creative products have been used effectively by investigators to share knowledge and make it more accessible to targeted stakeholder groups such as patients, the public and practitioners. Twenty-five artistic and creative products were produced in 2016-17 by 15 (4%) grants and awards (average 1.8; SD 1.6). The most frequent forms of these products were artwork, (digital) artefacts and film, video or animation (Figure 24). All of the artistic and creative products were realized after the start year of the award, with 76% occurring in the first or second calendar year after the award start year.

FIGURE 24
Artistic and Creative Products



Health Innovation’s Partnerships and Collaborations

In 2016-17, Alberta Innovates recognized innovation as a key driver to reverse the trend of rising healthcare costs in Alberta year after year. One aim was to improve patient outcomes through the facilitation of state-of-the-art healthcare innovations. Alberta companies have an opportunity to play a role in shaping how healthcare evolves. To this end, Alberta Innovates invested in several innovation initiatives to establish or enhance the required activities and capabilities for innovation success as built through partnerships and collaborations. By collaborating with partners in the health system, post-secondary institutions, small and medium sized enterprises (SMEs), multinational enterprises (MNEs), government and others, Alberta Innovates helped translate research into solutions. It assisted in targeting those solutions to meet the identified needs of the health system and creating an environment for innovation that will make a difference in the lives of Albertans. It is by driving research into innovation that these differences in the form of health, economic and social impacts will be accelerated and increased.

Translating Research into Solutions

Several of Alberta Innovates' innovation initiatives in 2016-17 involved partnerships that focused on translating research into solutions that have a strong potential for commercialization and healthcare transformation. These solutions included innovative products, tools, therapies and services.

- The **Alberta/Pfizer Translational Research Fund** is a partnership with Alberta Innovates, Pfizer Canada, Western Economic Diversification Canada and the Government of Alberta. In alignment to priorities of both Pfizer and the province, this initiative supports commercially promising health and medical research conducted in Alberta's academic and research institutions in order to bring concepts or ideas to market more quickly. The initiative also provides an important opportunity for innovators to benefit from the technical, business, and commercialization expertise offered through Pfizer Canada. Since its inception in 2012, this initiative has assisted in progressing technology from preclinical models to phase I and phase II clinical trials and contributed to the development of novel diagnostic tools and software, a drug delivery device, four prototypes, and the therapeutic potential of novel compounds in the treatment of disease was characterized. Eight intellectual property and licensing agreements were realized, including two issued patents and one technology was adopted into national research studies and implemented in several research hospitals. Additionally, more than 160 highly skilled personnel were directly or indirectly supported through this fund, including the direct support of 28 full time equivalents (FTE). The supported investigators have also attracted nearly \$13 million in follow-on funding.
- The **Alberta/Novartis Translational Research Fund** was formed in 2014 through a partnership between Alberta Innovates, Novartis Pharmaceuticals Canada Inc. and the Government of Alberta. This opportunity supports translational R&I projects that focus on multiple sclerosis with the aim to translate novel innovations, evaluation methods and/or care pathways into practice. Four grants were awarded in 2016 and early progress and outcomes include: the securing of nearly \$1 million in additional funding; the production of two tools and methods (i.e., a model of mechanisms or symptoms and an improvement to research infrastructure); one software development; the establishment of five collaborations and partnerships; and the development of one therapeutic intervention.¹

¹ The progress and outcomes of the Alberta/Novartis Translational Research Fund are collected through Researchfish® and therefore have been reported in aggregate with other grants and awards throughout this report.



Targeting Solutions to Meet Health System Needs

New technologies and innovative care models offer the potential to improve patient health and reduce healthcare costs in the long term. However, they often also require high upfront costs and are complex to introduce into the system. Recognizing these challenges, Alberta Innovates has established a number of initiatives to support the health system in undertaking innovation activities in partnership with industry to help drive health innovation that is responsive to health system needs.

- **Accelerating Innovations into Care (AICE)** provides funding support to accelerate the testing and adoption of new technologies solutions within the Alberta health system that have been developed by small-medium sized enterprise (SME) innovators. AICE assists Alberta's health system in making evidence-based decisions by testing and validating the impacts of new technologies, particularly on disease pathways or workflow, with the intent of informing adoption and improving the health system and overall health of Albertans. At the same time, SMEs gain critical market evidence that will help them enter health care markets globally. Since its implementation in Fall 2015, several potential collaborations have been explored and some have received funding;
- **CIHR eHealth Innovation Partnership Program (CIHR eHIPP)** is a partnered funding opportunity with CIHR that is intended to identify patient-oriented eHealth solutions that will improve health outcomes, patient experience, and lower the cost of care along the continuum for seniors with complex care needs in their homes. In Fall 2016, funding was provided to two projects to collaborate with SMEs with digital solutions to help remotely monitor blood pressure in high risk patients in their homes and provide better diabetes care in isolated First Nation communities. Although these projects are on track, more time is required before results will be realized.

Health Impacts

It is often cited that it is a 17-year process to move research evidence into the real-world where it can improve health and saves lives.^{5,6} Early evidence of contributions to health and health-related impacts within the period of funding are, therefore, leading indications of the potential achievements to be realized over time. In 2016-17, 42 (42%) researcher grants and awards reported achieving a total of 121 health outcomes in relation to health status, the determinants of health and/or quality of care (Figure 25). As per Table 3, the vast majority of these outcomes reflected changes in quality of care and, more specifically, changes in the acceptability and appropriateness of care.



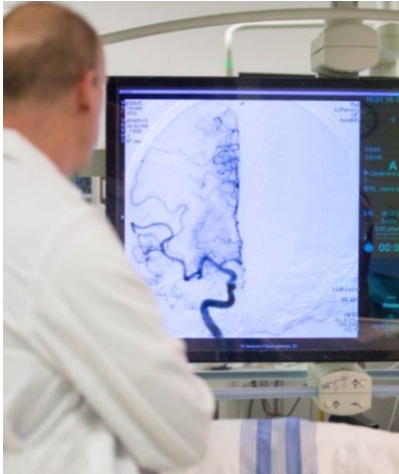
FIGURE 25
Improving the Health of Albertans and Others



TABLE 3
Health Outcomes Achieved by Researchers*

Types of Health Outcomes	Health Outcomes	
	#	%
Changes in Health Status		
Morbidity	8	7%
Mortality	1	1%
Quality-Adjusted Mortality	2	2%
Change in Determinants of Health		
Modifiable risk factors	6	5%
Social determinants	4	3%
Environmental determinants	1	1%
Changes in Quality of Care		
Acceptability	20	17%
Accessibility	12	10%
Appropriateness	19	16%
Effectiveness	15	12%
Efficiency	15	12%
Safety	10	8%
Competence	6	5%
Continuity	2	2%
Total	121	

* Excludes trainee awards



In addition to the health outcomes, 42 medical products, interventions and clinical trials were reported by 28 (8%) grants and awards (average 1.6, SD 1.0). Nearly one-third of these were therapeutic interventions (Figure 26) that were focused on drugs, cellular and gene therapy, medical devices, psychological/behavioral and complementary medicine. The stage of development of these medical products, interventions and clinical trials were broad, ranging from initial development in the laboratory to wide-scale adoption in the health system (Figure 27). This diversity reflects the complexity of health research and innovation, with different stages of discovery and testing being necessary to ensure safety, effectiveness and efficiency prior to potential adoption in the health system. Of note is that with the passage of time, more impacts related to adoption are now being realized relative to those reported in 2014-15 (see Appendix C).

FIGURE 26
**Progressing to Health Impacts through Medical Products,
 Interventions and Clinical Trials**

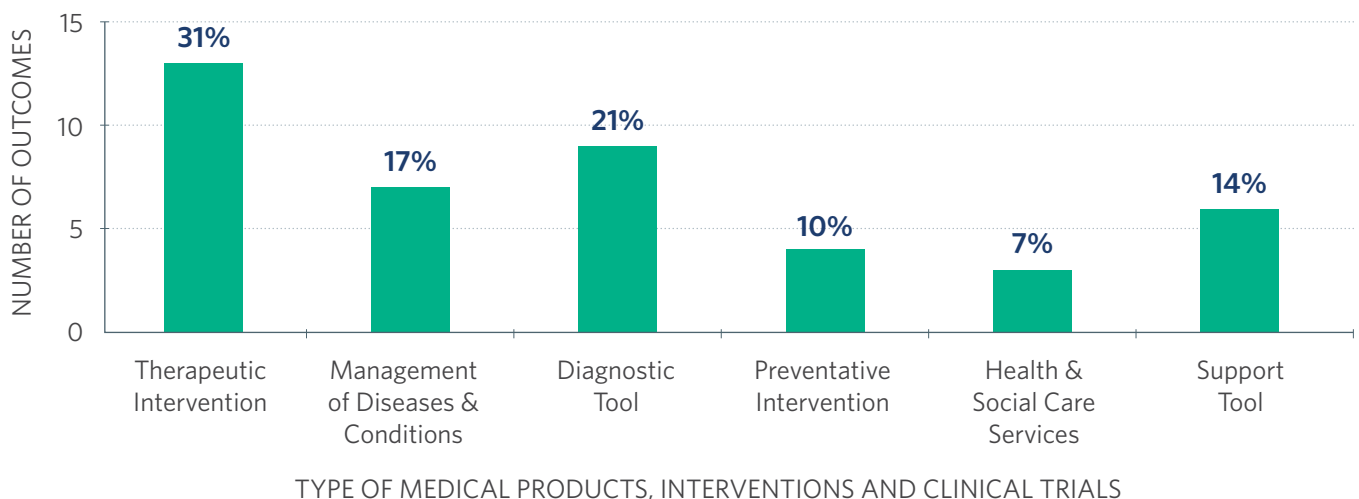
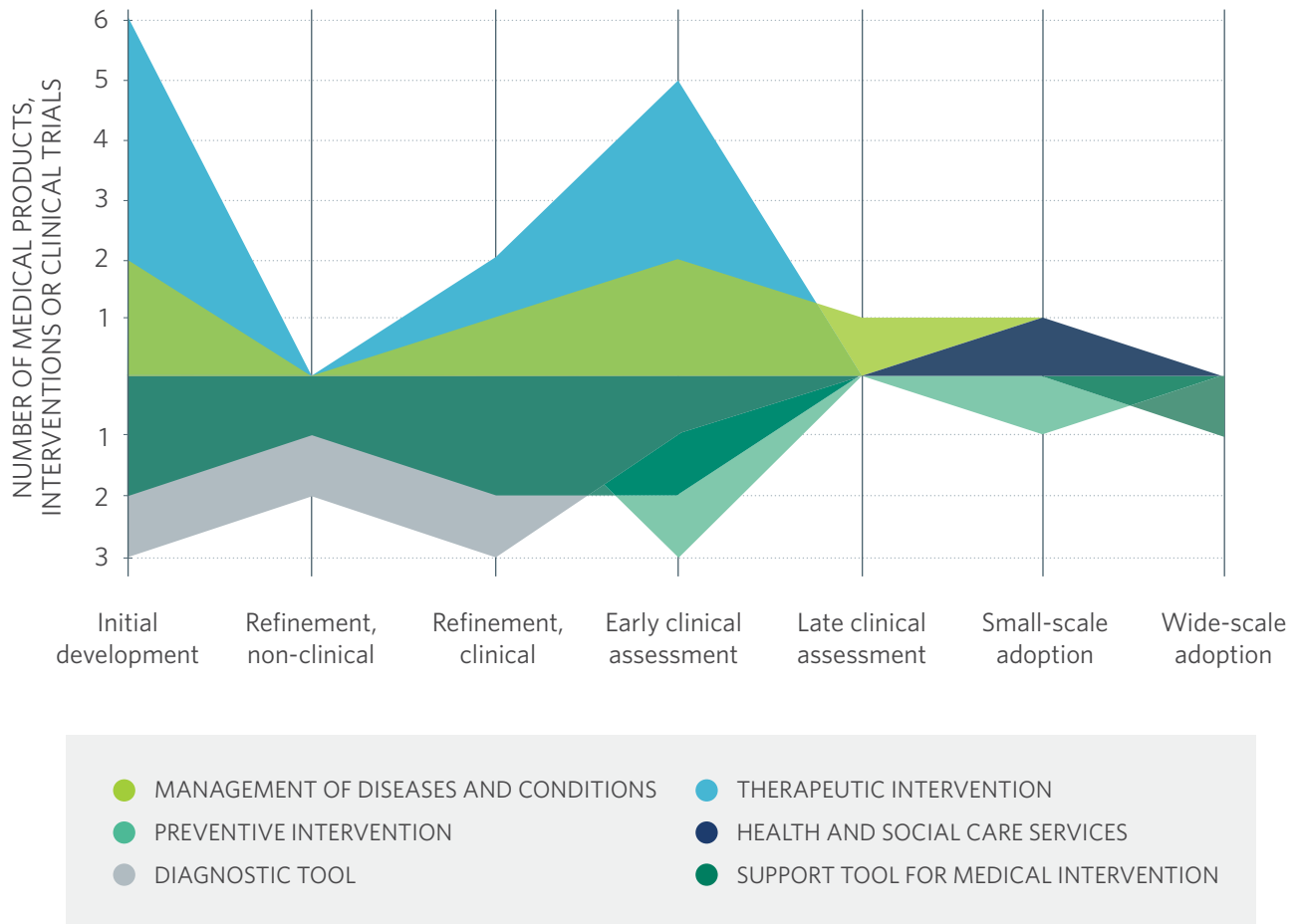


FIGURE 27
Development Stage of Medical Products, Interventions
and Clinical Trials



IMPACT EXEMPLAR

SONAR: PROMOTING BETTER COMMUNICATION FOR IMPROVED PATIENT SAFETY

Patient safety can be compromised when health care providers are not aware of a patient's use of natural health products (NHPs) because these products could interact with prescription medications. A research group led by Drs. Sunita Vohra, Sunil Des and Peter Venner developed the **Oncology SONAR screening form** to gather data about cancer patients' use of NHPs and prescription medications. This information can help health care providers identify and prevent known NHP adverse events, including interactions between prescription medications and NHPs, and monitor for other possible interactions.

SONAR promotes open communication between patients and health care providers, recognizing that patients are vital members of the health care team. Several sites across Canada are involved including the Cross Cancer Institute and Stollery Children's Hospital.

Preventing harm or providing additional label warnings is only possible with an effective and efficient reporting process.

This research group also aims to ensure that information about NHP use is collected and shared provincially and nationally. The researchers are in discussion with Cancer Control Alberta and Alberta Health Services to promote accurate patient medication histories and potential integration with the Alberta Electronic Medical Record. Not only is this information vital to optimize the safety of patients currently receiving treatments, but it may help identify unknown drug-NHP interactions which may benefit or harm patient health.

TO FIND OUT MORE

Integrative Health Institute
uab.ca/ih

The research brings patients, oncologists, nurses, pharmacists, naturopaths, and nurse practitioners together for the common goal of improving how information is gathered.



PRELIMINARY DATA INDICATE:

34%

of pediatric cancer patients use NHP with prescriptions

44%

report adverse effects

50%

of adult cancer patients use NHP with prescriptions

41%

report adverse effects

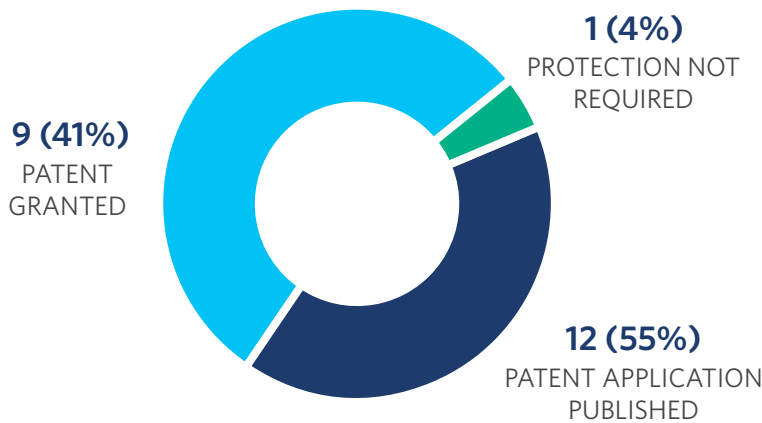
"We do not wish to suggest that all NHP use is harmful. We want to promote communication between patients and health care providers to understand which NHP-drug combinations are associated with harm and which are not. We are at the beginning of a journey."

Dr. Vohra

Contributing to Social and Economic Prosperity

Commercialization activities reflect more immediate and measureable market acceptance of the products of academic R&I. It also provides an early indication of the work being done by researchers and innovators that may potentially contribute to economic and societal impact. In 2016-17, 16 (4%) grants and awards reported 22 instances of intellectual property and licensing (average 1.5, SD 1.7). More than half of these consisted of published patent applications (Figure 28).

FIGURE 28
Intellectual Property and Licensing



Research-based spin-outs are generally understood to be small, new technology-based firms whose intellectual capital originated in universities or other public research organizations. These firms, which are often perceived to be dynamic and capable of generating novel fields and markets, have the potential to contribute to innovation, growth, employment and revenues. Successful spin-outs can also assist the government in promoting regional development and creating supportive environments for entrepreneurs. In 2016-17, five spin-out companies were established in association with 5 (1%) grants and awards. Only one of these had salaried people employed and this consisted of less than four employees.

IMPACT EXEMPLAR

ENRICHING THE HEALTH OF PREGNANT AND POSTPARTUM WOMEN



The Program has been running since Sept 2016 and serves approximately 70-90 families each week. They have distributed over 3.2 tonnes of donated food to date.

The ENRICH research team, funded by Alberta Innovates, aims to promote healthy weight through healthy eating among women during pregnancy and postpartum. A mother's weight during pregnancy is an indicator of health — too little or too much weight gain during pregnancy can pose risks to the mother and child. Healthy weight gain in pregnancy helps women avoid risks such as developing diabetes during pregnancy, serious labour complications, hypertension and cardiovascular disease later in life. ENRICH identifies innovative strategies to support appropriate, effective and safe approaches to promote healthy weights and healthy eating for pregnant and postpartum women. Rhonda Bell, Linda McCargar, Maria Mayan and Paula Robson are leading the studies that comprise the ENRICH program.

One strategy to promote women's health and healthy pregnancies is to support health care providers in learning to have meaningful discussions about weight and nutrition with their pregnant and postpartum patients. Many health care providers have not received formal training in nutrition and feel inadequately prepared for such discussions. Rhonda Bell was a core member of the group who authored *The Canadian Consensus on Female Nutrition: Adolescence, Reproduction, Menopause and Beyond*. These are national guidelines for all women that were undertaken and published by the Society of Obstetricians and Gynaecologists of Canada. They are endorsed by the Dietitians of Canada and several other health organizations. These guidelines summarize current clinical and scientific research around women's nutrition across the lifespan and provide links to practical tools including the recently launched website: hernutrition.ca. Currently, these guidelines have gained significant attention and mark the highest number of downloads for the Society.



ENRICH researchers have also implemented another innovative strategy to address a root cause of poor nutrition: household food insecurity. Unreliable access to food is an issue for many families, particularly those that recently immigrated to Canada. Pregnant women who have recently immigrated are at an increased risk for food insecurity and adverse maternal and child health outcomes. Through their work with the Multicultural Health Brokers (MCHB) the ENRICH researchers learned that many MCHB clientele are food insecure or in emergency food crisis. MCHB is a community-based organization in Edmonton that provides services to families new to Canada. A Community Resource Coordinator, who is part of the ENRICH team, has worked to develop and oversee the Grocery Run Program to provide emergency food hampers to families. The Program has been running since Sept 2016 and serves approximately 70-90 families each week. They have distributed over 3.2 tonnes of donated food to date and are working closely with approximately 30 volunteers per week to ensure that food is brought to the MCHB

and distributed to women and their families. The Grocery Run Program has helped to alleviate some of the food insecurity faced by women. It has also given the MCHB and ENRICH staff and researchers a chance to initiate a social enterprise that will allow women to learn and showcase skills to move them toward financial security and permanent employment as they settle in Canada.



MORE ABOUT THE ENRICH

enrich.ales.ualberta.ca/

MORE ABOUT THE GROCERY RUN PROGRAM AND HOW TO CONTRIBUTE

mchb.org/grocery-run-program/

SUMMARY

Alberta Innovates aims to be recognized nationally and internationally as a go-to organization for supporting and influencing the development of cutting-edge innovations and practices. The strategic planning process, informed by the program review will ensure that Alberta continues to benefit from these successes. Through supporting R&I, we hope to improve patient outcomes by facilitating state-of-the-art healthcare processes and systems, which currently makes up nearly half of the provincial government budget. Increased innovation is one of the paths for driving economic diversification and job growth while bending the cost curve.



This report demonstrates the progress that Alberta Innovates contributed to in 2016-17 in terms of strengthening the health sector in Alberta and building a seamless innovation system from discovery to impact. It also describes numerous strategies that Alberta Innovates delivered through partnerships and collaborations to ensure that Alberta's researchers and innovators are overcoming challenges and having a clearer path for innovation, one that concurrently provides patients with the best care for the best value.

These advancements reflect the efforts of our researchers and trainees as well as the collective efforts of many public and private organizations. It is through the building of human capacity and infrastructure, and the leveraging of expertise and resources that Alberta will be best able to address the health needs of Albertans, both now and in the future.

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APPENDIX A: DATA SOURCES AND TIMEFRAMES

Alberta Innovates' Annual Impact Report for Health Innovation: 2016-17 reflects information from multiple data sources. The primary source for impact-related data for our strategic investments is an electronic impact data collection system (Researchfish®). The information in this system includes numerous grants and awards, including those to trainees. As the grant and award process is dynamic, the grants and awards programs included in the Annual Impact Report may vary from year to year (i.e., new programs may be implemented by Alberta Innovates and others may be sunset) as may the specific projects funded within each program.

Due to the structure of data within Researchfish, data reported for grants and awards includes achievements realized between January 1, 2016 and March 31, 2017 (i.e., 15 month period) as opposed to the fiscal year of April 1, 2016 to March 31, 2017. Additional information about the methodology, quality assurance processes, and analysis in relation to this data are available in the [AIHS Annual Impact Report: 2014-15](#).

Information related to the progress to and achievement of outcomes and impacts for investments such as provincial partnerships and partnerships and collaborations were gathered from Alberta Innovates' lead representative(s) for the initiative. It reflects information from various administrative and program management records. For these initiatives, the data was predominantly limited to progress to impact and the impacts achieved between April 1, 2016 and March 31, 2017. In a few cases, milestones that were necessary to achieve progress to impact are mentioned even if such milestones were reached prior to April 1, 2016.

APPENDIX B: STRATEGIC INVESTMENTS

Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
Accelerating Innovation into CarE (AICE)	<p>Provides funding support to generate real-world evidence in a clinical setting for new technologies developed by SME innovators that have the potential to address priority needs of Alberta's health system. The funding enables the health system to test and validate the impacts of new technologies, particularly on disease pathways or workflow, with the intent of informing adoption and improving the health system and overall health of Albertans.</p> <p><i>50% total project costs up to \$150,000 per project; maximum of 18 months</i></p>	2	\$214K
Alberta/Eli Lilly Translational Research Fund Opportunity	<p>Collaboration between Eli Lilly, Alberta Innovates and Alberta Health to support targeted translational research and innovation projects that will impact the health of Albertans.</p> <p><i>\$1.5M total fund</i></p>	1	\$0.5M
Alberta/Novartis Translational Research Fund Opportunity	<p>A partnership with Novartis Pharmaceuticals Canada Inc., this fund supports translational research and innovation projects with a strong potential to advance Multiple Sclerosis (MS) patient care and/or research over the short or medium term (three to five years). The Opportunity will support the development of research and innovation projects in the priority topic areas identified by Novartis and the province of Alberta: development and implementation of evidence-based care; delivery of patient care; advancement of MS research and innovation; and patient engagement.</p> <p><i>Up to a maximum of \$100,000 per year for up to 3 years</i></p>	4	\$1.2M
Canadian Institutes of Health Research eHealth Innovation Partnership Program (CIHR eHIPP)	<p>eHealth Innovation Partnership Program (eHIPP), is a collaborative funding program designed to create a new generation of cost-effective patient- and population-centered health care solutions by supporting partnerships between Canadian technology companies and 'innovation communities' to co-develop and integrate innovative e-health solutions that deliver real-world health care value.</p> <p><i>Total Project values up to \$375,000 per year for four years from all partners (\$46,875 per year from)</i></p>	2 <i>(including 1 grant funded through the ACPLF)</i>	\$0.14M

Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
CIHR Partnership – Chronic Disease	<i>Alberta Innovates matched funding of \$4.89 million for a period of support from January 1, 2016 to December 31, 2020</i>	2	\$2.0M
College of Licensed Practical Nurses of Alberta (CLPNA) – Advancing Knowledge in Practical Nursing Research Grant	<p>A collaboration with CLPNA, this funding opportunity is designed to support research and integrated knowledge translation (iKT) projects that focus on LPN practice, utilization, and the quality of nursing care provided by LPNs in the Alberta. The results from the project are expected to add to the growing body of knowledge about the LPN role and provide evidence to support the growth of LPN the profession.</p> <p><i>One year, non-renewable grant will provide a minimum of \$5,000 and a maximum of \$25,000.</i></p>	1	\$25,000
Collaborative Research & Innovation Opportunities (CRIO)	<p>Funding for collaborative research in priority areas for Alberta that engage knowledge-/end-users for the purpose of producing new knowledge and translating that knowledge to improve health and the healthcare system.</p> <p>CRIO Team: Enables a large, interdisciplinary team or network of researchers with national or international stature to tackle health issues involving many stakeholder groups. The team must have an experienced leader identified. The research activities must engage knowledge- and/or end-users to encourage uptake of evidence and must be aligned to priority areas of health for Albertans. Includes one grant funded through the Alberta Cancer Prevention Legacy Fund (ACPLF).</p> <p><i>Up to \$1,000,000 per year for up to 5 years.</i></p> <p>CRIO Program: Enables a group of interdisciplinary collaborators (three or more) who may already work together to focus on a complex program of health research and innovation that addresses health research needs, gaps or opportunities. The research program must engage knowledge- and/or end-users to encourage uptake of evidence and must be aligned to priority areas of health for Albertans. Includes two grants funded through the ACPLF.</p> <p><i>Up to \$500,000 per year for 5 years.</i></p> <p>CRIO Project: Allows a small group of interdisciplinary collaborators (minimum three) to come together with knowledge- and/or end-users to complete a defined health research project with defined deliverables.</p> <p><i>Up to \$250,000 per year for up to 3 years.</i></p>	<p>11 <i>(including 1 grant funded through the ACPLF)</i></p> <p>6 <i>(including 2 grants funded through the ACPLF)</i></p> <p>16</p>	<p>\$12.3M</p> <p>\$2.8M</p> <p>\$1.1M</p>

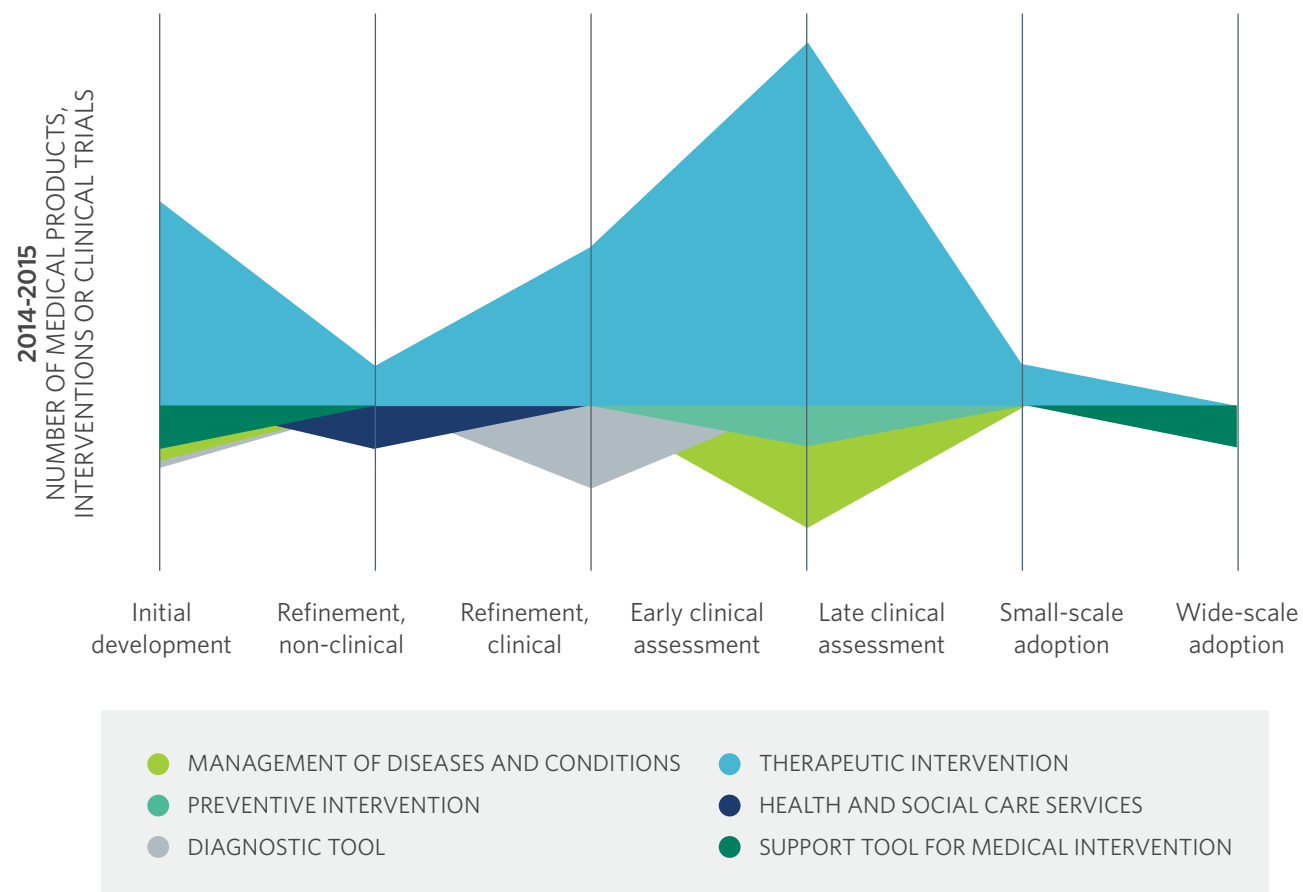
Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
Collaborative Research & Innovation Opportunities (CRIO) <i>continued</i>	CRIO Project Cancer: Funds cancer research through the ACPLF across the cancer continuum, from causes and prevention to treatment and care, enabling a small group of interdisciplinary collaborators (minimum three) to come together with knowledge- and/or end-users to complete a defined health research project with defined deliverables. <i>Up to \$250,000 per year for up to 3 years</i>	12	\$1.1M
	CRIO Cancer Prevention Research Opportunity: Funds cancer research through the ACPLF in at least one of the following ACPLF priority areas: prevention in primary health care; community mobilization/engagement; health and wellness equity; healthy lifestyles/wellness/risk modification; research into integration of care across the cancer prevention continuum; data/surveillance; performance indicators. <i>Up to \$250,000 per year for up to 5 years (level 1); Up to \$500,000 per year for up to 5 years (level 2); Up to \$1,000,000 per year for up to 5 years (level 3).</i>	4	\$2.3M
	CRIO Population Resiliency: Focuses on developing and strengthening pre- and post-disaster population resiliency and informing readiness planning for future natural disasters and other catastrophic events. This will be achieved by using a collaborative approach to produce new knowledge, coupled with the translation of research findings to knowledge- or end-users for impact on the health of Albertans and/or the health system. <i>Up to \$1,000,000 per year for up to 3 years</i>	1	\$1.2M
Health Effects of the Alberta Wildfires	In development with the Canadian Institutes of Health Research and the Canadian Red Cross, this grant supports research that works to minimize the health impacts that the provincial wildfires and subsequent evacuations have had on Albertans. The research grant focuses on: pediatric resiliency related to mental health and addiction; adult resiliency related to mental health and addiction; and occupational health (e.g., workforce PTSD, exposure to air pollution/smoke affecting the respiratory system). <i>\$250,000 per year for a maximum of two years</i>	1	\$0.5M

Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
Health Research New Investigator Award	<p>Developed in collaboration with our university partners to support the recruitment of outstanding junior researchers in key priority areas of health research. Funding for this award was transitioned from the already successful Translational Health Chairs program.</p> <p><i>Up to a maximum of \$1,000,000 over 5 years with the possibility of a 2 year maximum extension.</i></p>	1	\$0.2M
Merck for Mothers	<p>A funding partnership with Merck Canada Inc., and Alberta Health Services to address maternal health needs in the indigenous communities of Alberta. This collaborative initiative aims to improve access to high quality care for aboriginal mothers in Maskwacis, Little Red River Cree Nation and inner-city Edmonton.</p>	1	\$0.1M
Partnership for Research & Innovation in the Health System (PRIHS)	<p>A funding partnership with Alberta Health Services that supports the activities of the Strategic Clinical Networks focused on improving patient care and value for money in Alberta's health system.</p> <p><i>Up to \$250,000 per year for up to three years</i></p>	24 <i>(including 1 grant funded through the ACPLF)</i>	\$2.1M
Translational Health Chairs	<p>A partnership with Alberta's Comprehensive Academic and Research Institutions to recruit translational health leadership in priority areas to improve health and the health system.</p> <p><i>From \$250,000 to \$600,000 per year for 7 years</i></p>	9	\$5.2M

Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
Training and Early Career Development	Total of all Training and Early Career Development	264	\$15.4M
	Graduate Studentships and Postdoctoral Fellowships: support trainees in gaining broad experience in the health research environment to help them succeed in launching careers in academia, industry, government or elsewhere. Graduate Studentships provide funding for individuals enrolled in a thesis-based Master's or PhD program in a health-related research area at an Alberta university. <i>\$30,000 stipend and a research and career development allowance of \$2,000 per year for up to 4 years (maximum of 2 years support towards a Master's degree)</i>	113	
	PLUS Option is an optional component offered through the Graduate Studentship Program. It customizes the Graduate Studentship experience by supporting trainees in a way that best suits their career plans. The PLUS can be used to seek training and internships opportunities beyond those acquired through their direct graduate research training, such as business, education, industry, government and/or health policy, within clinical or other health research related environments. <i>Up to \$30,000 for one year, and a research and career development allowance up to \$2,000.</i>	1	
	Postgraduate Fellowships provide funding for individuals with a PhD and/or professional health degree (without clinical accreditation in Canada) who have a post-doctoral appointment at an Alberta university in a health professional or health related program. <i>\$50,000 per year, and a research and career development allowance of \$5,000 per year for up to 3 years</i>	2	

Funding Opportunity	Description	Number of Grants/Awards Active in 2016-17	Total Investments in 2016-17
Training and Early Career Development <i>continued</i>	Clinician Researcher Training: enables the training of clinician scientists who split their time between clinical training or practice and research. These are individuals with medical training and research experience who develop research questions encountered in practice and translate their findings into care.		
	The MD-PhD Studentship provides support for individuals pursuing combined MD-PhD degrees at an Alberta university. <i>\$30,000 per year, and a research and career development allowance of \$2,000 per year for up to 6 years</i>	21	
	The Clinician Fellowship provides support for individuals who have clinical credentials in Canada to pursue graduate and postgraduate research in a health professional or health-related program in Alberta. <i>\$70,000 per year, and a research and career development allowance of \$5,000 per year for up to 3 years</i>	36	
	Legacy Training Awards: Although this program closed after AIHS introduced new programs for Training and Early Career Development in 2012, these trainees received their initial award prior to July 1, 2012 and were continuing to receive funding in 2015-16.		
	Full-time Studentships enabled academically superior students to undertake full-time research training in the basic biomedical sciences or in clinical research. \$30,000 per year; Research Allowance value: <i>\$2,000/year. Maximum of 5 years; maximum 3 years of funding available at the master's level.</i>	10	
	MD-PhD Studentships provided an opportunity for exceptional candidates who wished to pursue careers as Clinical Investigators to study for the MD and the PhD degrees simultaneously. AIHS support was complementary to the formal MD-PhD programs at the University of Alberta and the University of Calgary. <i>\$30,000 per year; Research Allowance: \$2,000 per year. Maximum of 6 years.</i>	1	

APPENDIX C: DEVELOPMENT STAGE OF MEDICAL PRODUCTS, INTERVENTIONS AND CLINICAL TRIALS, 2014-15





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