Canadian Cancer Research Alliance
Alliance canadienne pour la recherche sur le cancer

Canada's Investment in

Cancer Risk and Prevention Research, 2005–2021

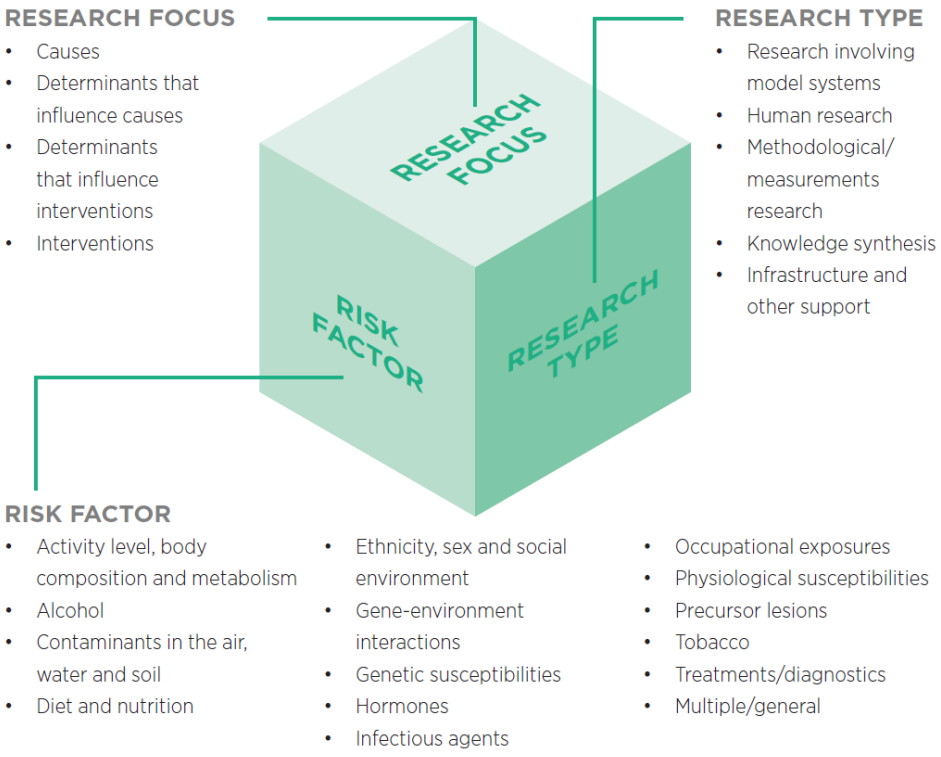
CANADIAN CANCER RESEARCH SURVEY

Since 2005, CCRA members have prioritized the quantification of Canada's cancer research funding. To that end, the CCRA's Canadian Cancer Research Survey (CCRS) was created, a database that has evolved over time to track the research investments made by over 40 organizations.

The CCRS is estimated to cover about 60–80% of the research investments made in Canada through peer-reviewed processes. Data are updated and corrected annually and will vary from previously published reports. Investment numbers may differ from those reported by contributing organizations because of methodological conventions like prorating grant budgets.

THIS REPORT

This brief report provides an overview of the level and nature of the investment in cancer risk and prevention research made by Canadian research funding organizations. Page 3 of this report presents annual investment data, while page 4 shows the proportion of the investment by key attributes for 2021 (graphs) and for the three five-year periods (tables). Data were coded to the Cancer Risk and Prevention Cube below.



An estimated 33% of cancer cases diagnosed in 2015 were attributable to potentially preventable risk factors.[1] Applying targets to reduce smoking and excess body weight could prevent more than 34,000 cancer deaths in the coming 25 years.[2] Smoking is estimated to be the largest contributor to cancer management costs and billions of savings could be realized in Canada with a reduction in smoking prevalence.[3]

Access interactive visualizations and a related slide deck at

www.ccra-acrc.ca.

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1 Poirier AE et al. (2019). The current and future burden of cancer attributable to modifiable risk factors in Canada: Summary of results. *Preventive Medicine*, 122:140-7. doi.org/10.1016/j.ypmed.2019.04.007
2 Pader J et al. (2021). Estimates of future cancer mortality attributable to modifiable risk factors in Canada. *Can J Public Health*. 2021 May 25. doi: 10.17269/s41997-020-00455-7. Online ahead of print.
3 Ruan Y et al. (2021). Estimating the future cancer management costs attributable to modifiable risk factors in Canada. *Can J Public Health*. 2021 May 25. doi: 10.17269/s41997-021-00502-x. Online ahead of print.

Overall Investment

A total of $889M was invested in cancer risk and prevention research from 2005 to 2021, which represented 10% of the overall cancer research investment. The investment in cancer risk and prevention research was $39M in 2021. On a per capita basis, this translates to $1.03, less than the cost of an apple.

Major Funders

The Canadian Institutes of Health Research (CIHR) was the single largest funder of prevention research, accounting of 32% of the 17-year investment, and thus also a lead funder for investments in research on most risk factors. Other key funders were: Canadian Cancer Society (CCS), Canadian Partnership Against Cancer (CPAC), Ontario Institute for Cancer Research (OICR), and Alberta Innovates.

Genes

Over the 17 years, $238M was invested in research on genetic susceptibilities ($158M) and gene-environment interactions ($80M). Combined, these two risk factors accounted for 27% of the total cancer risk and prevention research investment.

Tobacco

Investment in tobacco research reached a peak in 2016 at $7M and had a 17-year total investment of $94M. Interventional research reflected a growing proportion of this investment. 77% of the 2021 research investment was for projects led by nominated principal investigators located in Ontario.

CanPath

Investment in CanPath (Canadian Partnership for Tomorrow's Health) by the Canadian Partnership Against Cancer and provincial partners formed 20% of overall 17-year investment and was the single largest targeted investment. This has been and will continue to be an important platform for future decades of cancer risk and prevention research.

Alcohol

Among the risk factors for which the data were coded, the lowest investment was for alcohol. It accounted for less than 1% of the cancer risk and prevention research investment in each year examined. A recent guidance document released by the Canadian Centre for Substance Abuse and Addiction summarizes the mounting evidence of the health impacts of alcohol consumption.

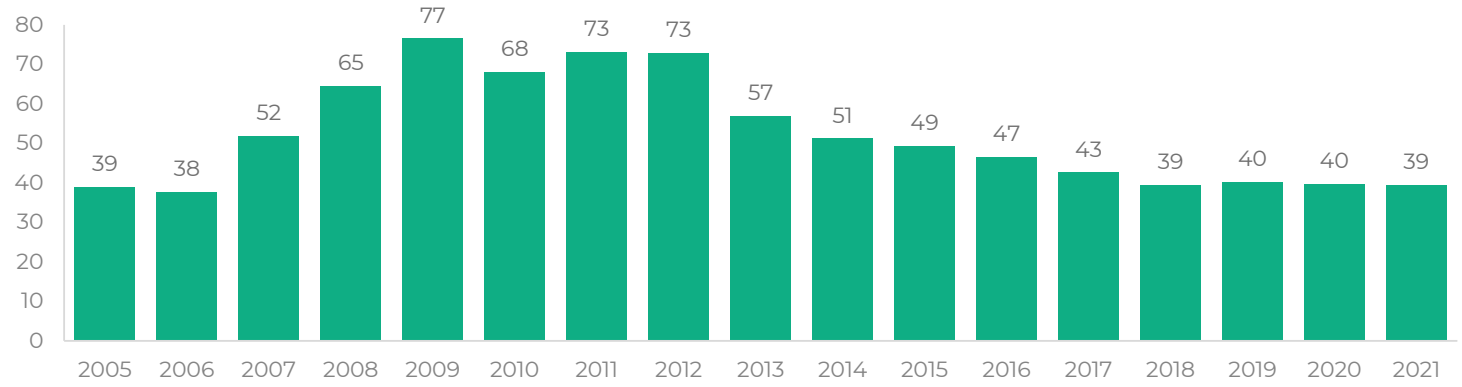
Infectious Agents

The research investment on infectious agents reflected an increasing proportion of the investment over the 17 years. About 41% of the overall research investment concerned the human papilloma virus (HPV), and another 17%, hepatitis viruses (B and C).

Researchers

There were 304 nominated principal investigators (PI) who had funding at some point in the period 2017-2021. When stratified by risk factors, most worked in the areas of genetic susceptibilities, tobacco, and infectious agents. Half of the PIs were funded for work focused on cancer causation.

Annual Investment ($M)

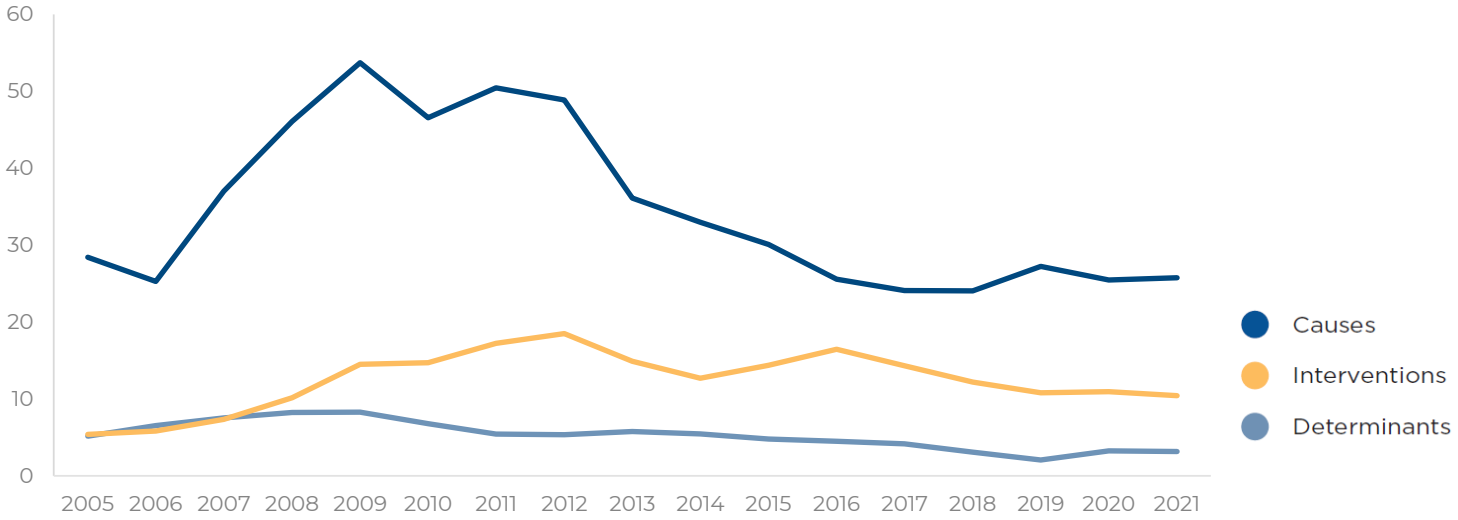


Investment by Funder ($M) [1]

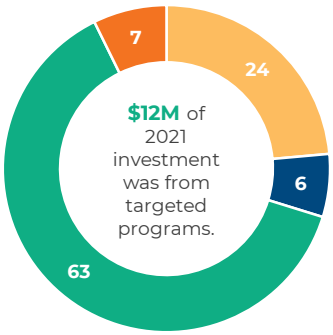
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CIHR	11.1	12.8	15.7	18.4	19.6	17.9	18.6	18.7	17.0	15.3	14.5	15.7	16.8	16.4	16.5	20.9	20.1
CCS	9.1	7.9	7.5	8.0	9.7	9.2	9.4	8.8	7.4	6.9	8.2	8.1	5.4	4.8	3.1	1.4	1.0
CPAC	0.0	0.0	0.0	9.2	9.0	5.6	7.6	11.9	3.9	5.0	3.3	3.6	4.7	3.3	4.1	2.2	3.2
OICR	0.4	0.3	2.5	0.7	3.6	4.4	5.6	6.0	4.2	4.0	3.8	3.4	3.2	3.3	4.1	2.8	2.6
Alberta Innovates [2]	0.8	0.9	2.0	2.6	2.8	2.9	5.0	3.4	5.9	4.8	4.1	2.3	1.6	1.0	0.7	0.6	0.3
Canada Research Chairs Program	2.2	2.6	2.3	2.2	2.2	2.3	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.4	2.4	2.5	2.6
CFI	0.8	0.7	2.5	3.4	5.5	5.6	5.4	3.8	1.3	0.2	0.3	0.5	0.4	0.4	0.3	0.3	0.7
Other funders	14.6	12.6	19.4	20.1	24.0	20.1	19.4	17.9	15.0	12.7	12.8	10.8	8.1	7.8	8.9	8.8	8.9

[1] Organizations with 17- year investments exceeding $30M are listed by name.
[2] Alberta Innovates did not submit data for years 2020 and 2021.

Investment by Research Focus ($M)

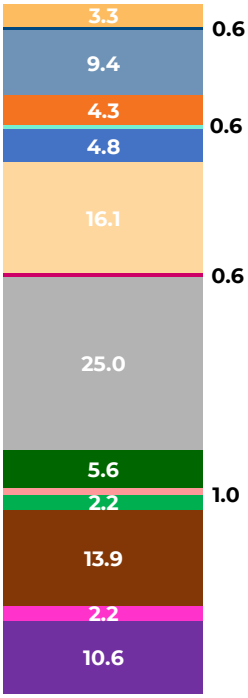


Program Type (%)



	2017–21	2012–16	2007–11
National – Targeted	**35**	35	35
Regional – Targeted	**6**	9	6
National – Other	**58**	43	48
Regional – Other	**9**	13	11

Risk Factor (%)



	2017–21	2012–16	2007–11
Activity level, body composition & metabolism	**3.6**	4.2	3.0
Alcohol	**0.7**	0.6	0.4
Contaminants in the air, water & soil	**6.1**	4.8	4.7
Diet & nutrition	**5.5**	4.5	4.2
Ethnicity, sex & social environment	**1.1**	3.4	2.8
Gene-environment interactions	**5.3**	9.6	11.6
Genetic susceptibilities	**17.5**	16.0	17.4
Hormones	**0.5**	0.7	1.6
Infectious agents	**21.8**	15.4	11.2
Occupational exposures	**4.6**	4.6	1.5
Physiological susceptibilities	**0.8**	1.3	1.6
Precursor lesions	**2.1**	1.3	2.2
Tobacco	**15.2**	10.1	7.9
Treatment/diagnostics	**2.8**	1.7	1.5
Multiple/general	**12.4**	22.1	28.5

Research Type (%)

	2017–21	2012–16	2007–11
Research involving model systems	**20**	17	15
Human research	**47**	41	32
Methodological/measurements research	**5**	6	3
Knowledge synthesis	**1**	1	1
Infrastructure & other support	**26**	36	49

CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

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