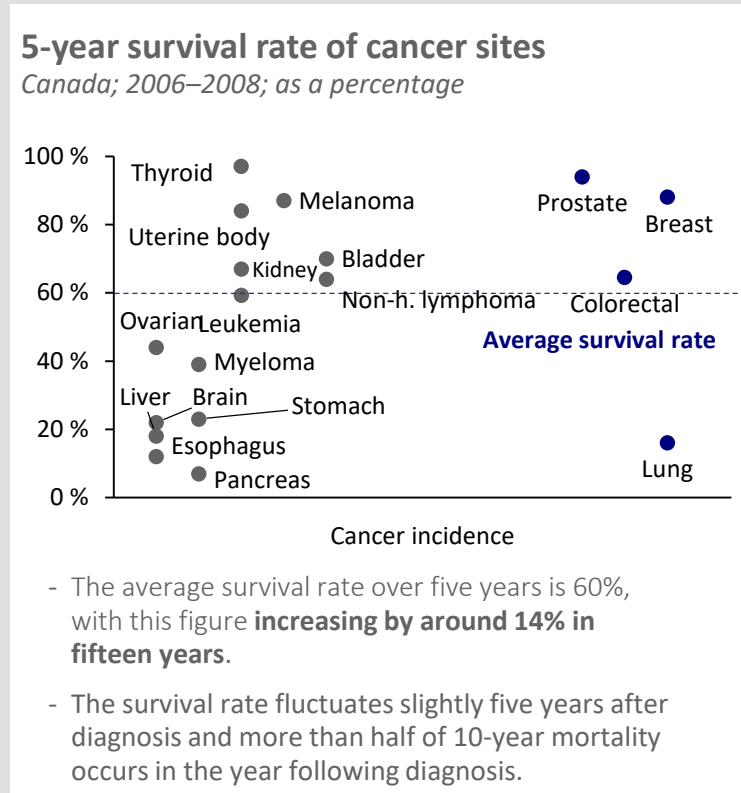


Cancer Clinical Research in Quebec

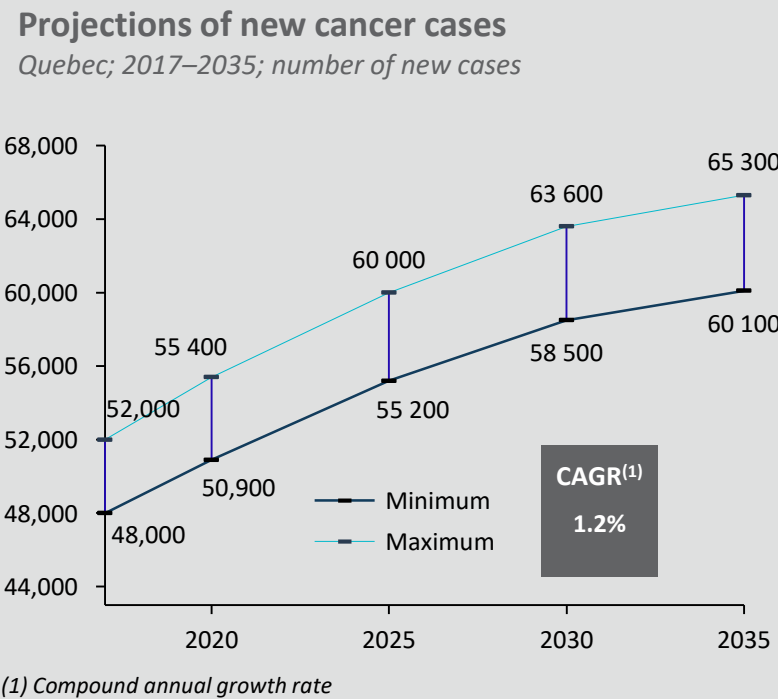
The *Consortium de recherche en oncologie clinique du Québec* (Q-CROC) is a support organization that coordinates an network of cancer clinical research in Quebec. Q-CROC has commissioned Avisaio to estimate the economic impact of cancer clinical research on Quebec society and to document the effects and other economic benefits related to clinical research.



30% of deaths in Canada are due to cancer, which is equivalent to approximately 18,500 deaths per year in Quebec in 2016. The majority of these deaths occur after the age of 60. The number of new cancer cases should increase with the aging of the population in Quebec.



50,000 New cancer cases diagnosed per year in Quebec



Cancer research in Quebec

- Cancer research represents annual investments of between \$188 and \$230 million, of which 57% to 70% come from the public and charity sector
- Public and charitable investments have been stable for the last seven years.
- Quebec stands out due to the strong presence of contract research organizations (CROs) and lower private investments in public research environments.

Cancer clinical research

- Clinical research is key to the development and improvement of treatments and diagnostics.
- Avisaio estimates that approximately 50% of cancer research in Quebec is clinical research.
- Q-CROC lists 1,830 cancer clinical studies in Quebec, nearly 1,400 of which are either starting, actively recruiting patients, ongoing, or monitoring patients.

Cancer Clinical research is increasingly effective in Quebec



Participation is growing: patients recruited grew by an average of 12% per year and the number of studies recruiting at least one patient increased by 8% between 2014 and 2017⁽²⁾



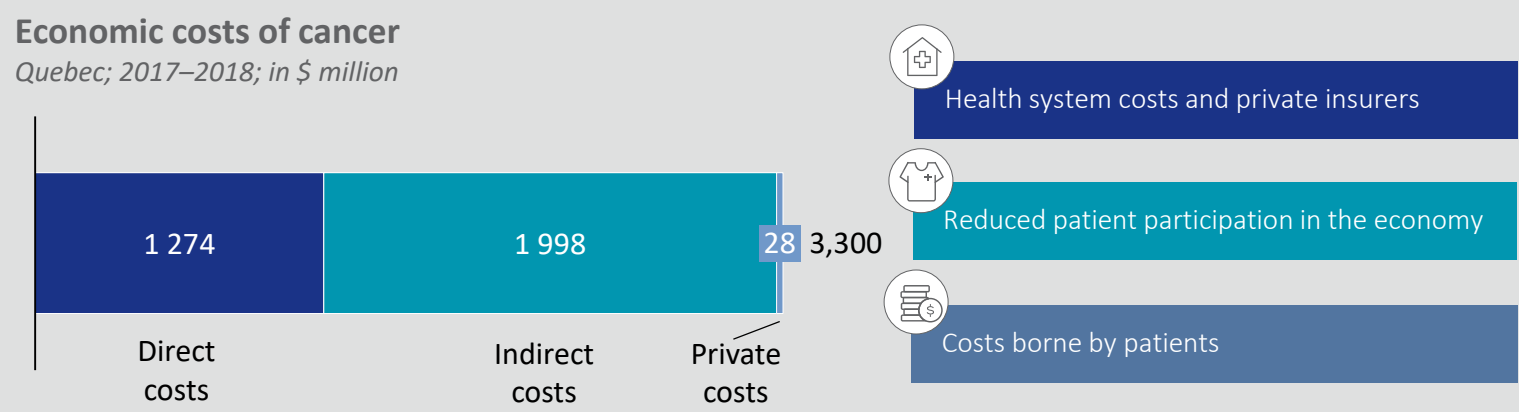
Recruitment objectives: The number of studies achieving their recruitment objectives increased from 41% to 46% and the duration of recruitment decreased between 2014 and 2017.



The start-up time is shorter: the median number of days between the protocol and the first recruited patient decreased 5% for active studies between 2014 and 2017 compared to studies between 2010 and 2013.

(2) This growth in recruitment should be reversed, as cancer clinical trials are becoming more and more targeted.

\$3.3 billion The economic costs of cancer in Quebec, 60% of which are associated with the decline in patient participation in the economy



Q-CROC acts as a **trend accelerator**. It fosters network benefits in the field of research.

The literature identifies several network benefits

- Efficiency and collaborative gains as a result of sharing best practices and standardization of processes
- Reduced time to initiate studies
- Better accessibility to sites and patients
- Independent performance monitoring
- Faster integration of new treatments in healthcare facilities

- 13** Member institutions
- 25** Dedicated Q-CROC resources
- >500** researchers and research professionals

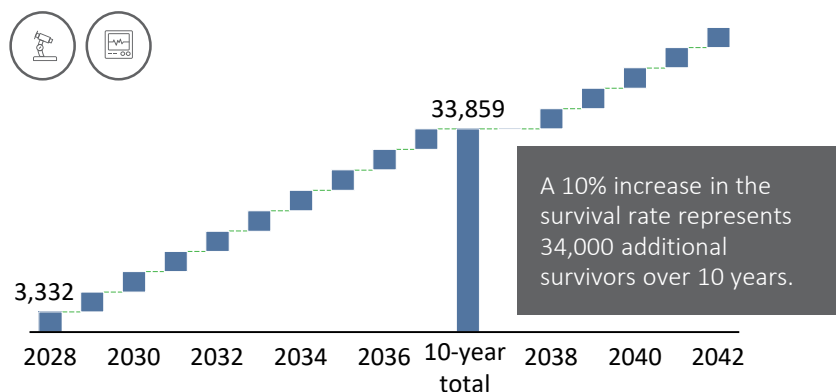
Cancer clinical research generates an economic impact of nearly \$300 million due to its contribution to extending patient life.



The Aviseo model estimates the economic impacts of cancer research by simulating a 10% rise in the survival rate. We summarize results for the scenario in which the effect on the survival rate is felt after 10 years.

Additional survivors per year of diagnosis

Number of survivors



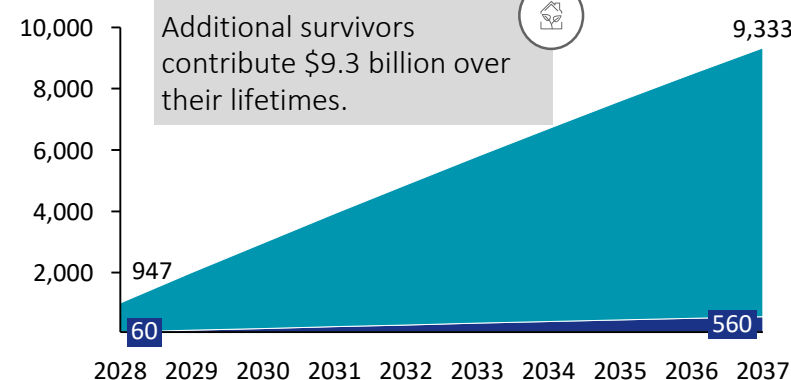
Additional survivors have an economic contribution that is partly attributed to cancer research in Quebec.

Framework for analyzing the economic impacts of cancer clinical research



Cumulative economic contribution of survivors

In \$ million



All research in Quebec accounts for \$560 million of these impacts, i.e. 6%.

\$280 million
The economic impacts of clinical research

\$70 M
in unrealized economic contribution for a one-year delay in cancer research

\$22 to \$30
leverage per \$100 investment in research

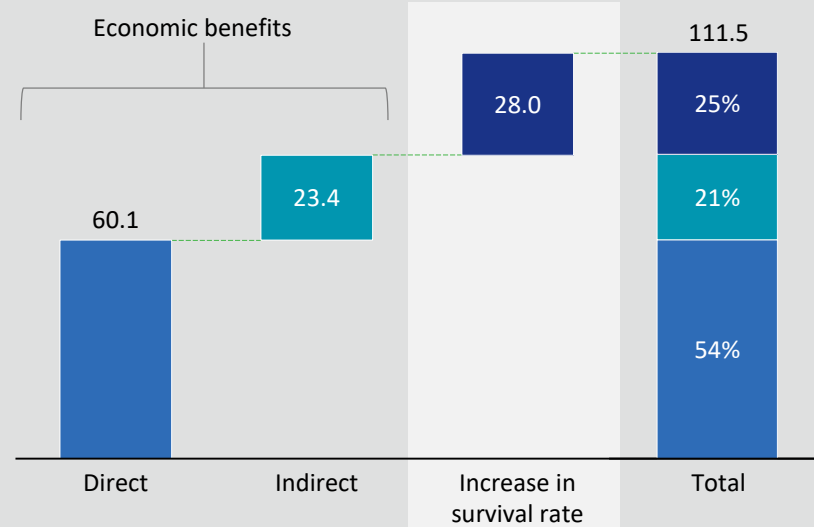
Expenditure in cancer clinical research in Quebec has a trickle-down effect in the economy, which is referred to as the economic benefits.

The effects generate **\$84 million in added value** per annum and support **over 900 jobs** in Quebec.

– This is equivalent to \$59 million in wages.

Effects and economic impact of clinical research

Quebec; in \$ million



Revenue for institutions

Cancer clinical research funded by the pharmaceutical industry generated estimated revenues of \$24–34 million in 2018

– Indirect costs to the industry account for **\$6–8 million**.

These amounts correspond to overbilling by healthcare institutions to cover administrative expenses, rent, and other general expenses.

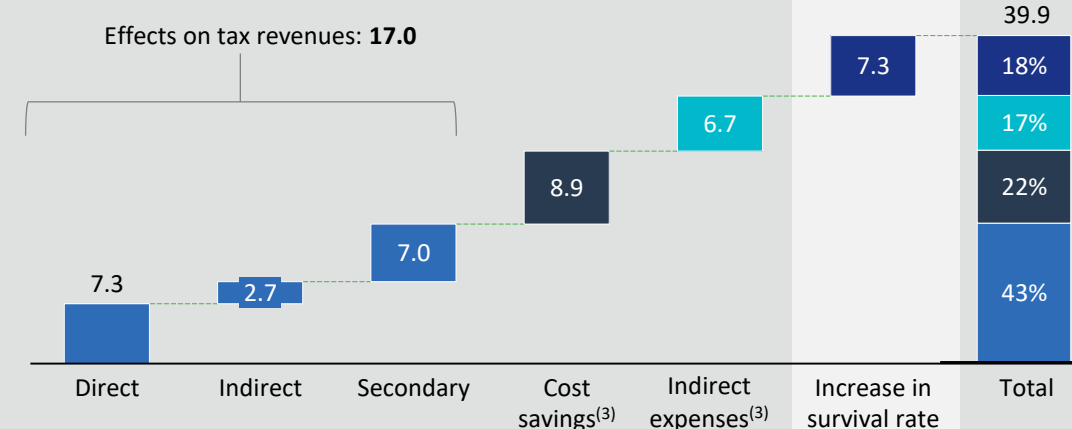
Cost savings

Cancer Clinical research involves the provision of treatments or diagnostic tests that are funded by clinical trials rather than by hospitals.

Cost savings for the health system were estimated at \$9 million in 2018, or more than \$11,000 per patient recruited in an industry-sponsored cancer clinical trial.

Clinical research revenue for the Quebec government

Quebec; in \$ million



(3) Tax revenues for the Q-CROC network

Clinical trials allow patients to access treatments under development that could prove more effective and extend their life or improve their quality of life.