Cancer Prevention in Canada – What do we know and what can we do?

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UNIVERSITY OF CALGARY

COMPARE
POPULATION ATTRIBUTABLE RISK

Canadian Cancer Society

CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

Alberta Health Services

Disclosures

- Relationships with financial sponsors
  - Grants/Research Support:
    - Grants received from CIHR, CCS
    - Research support from CPAC
  - Consulting Fees: CPAC

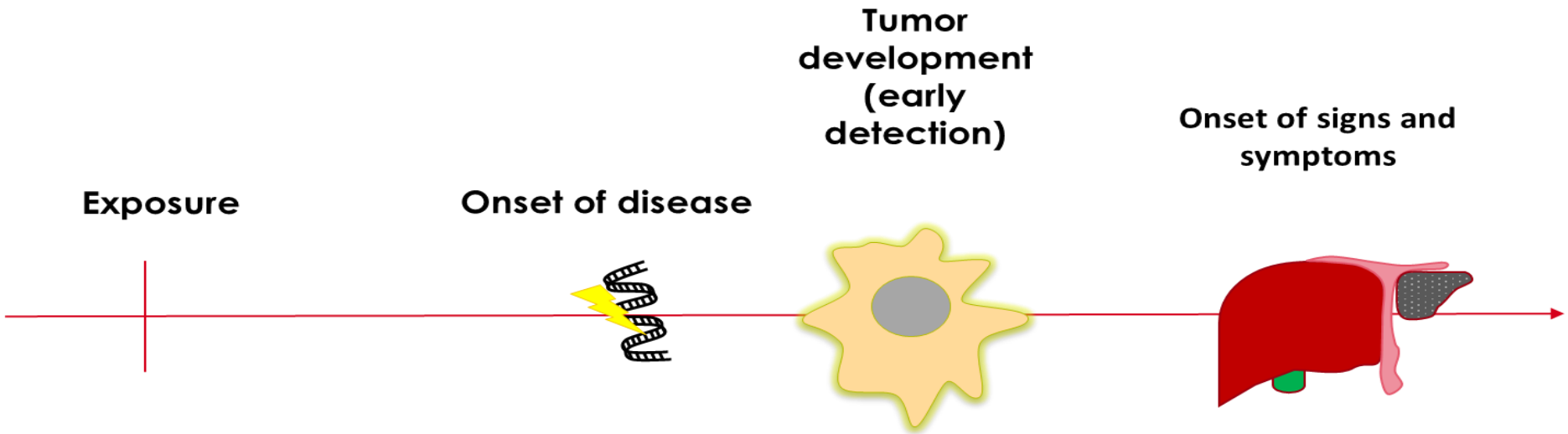
Outline/Objectives

- ComPARe Study
- To discuss the current and future burden of cancer incidence and mortality in Canada that could be prevented through changes in modifiable environmental, infectious and lifestyle risk factors.

- ComPARecon
- To discuss the economic impact that these decreases in cancer incidence could have in Canada.

- KT
- To disccuss the opportunities that exist for cancer prevention through changes in policies and practice in public health in Canada.

What is cancer prevention?



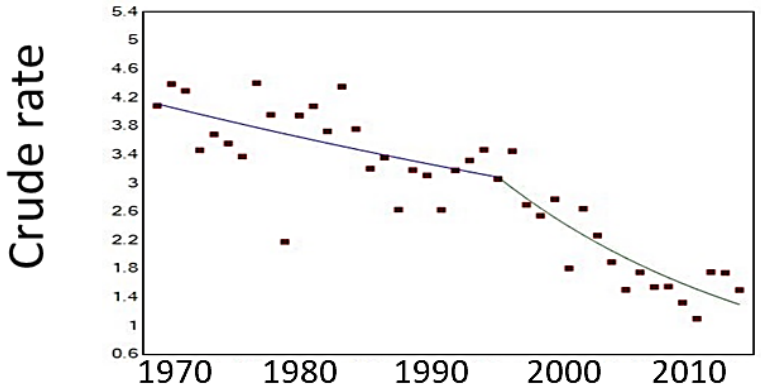
Primary Prevention: Risk reduction

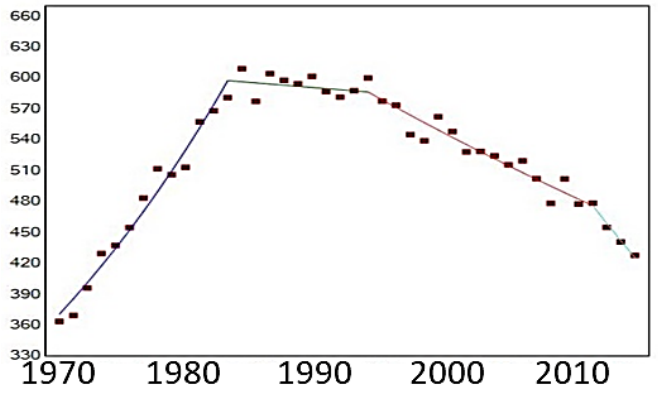
Secondary Prevention: Screening

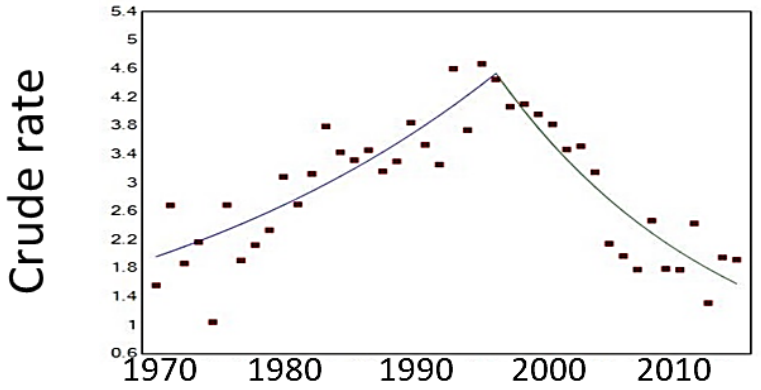
Tertiary Prevention: After diagnosis

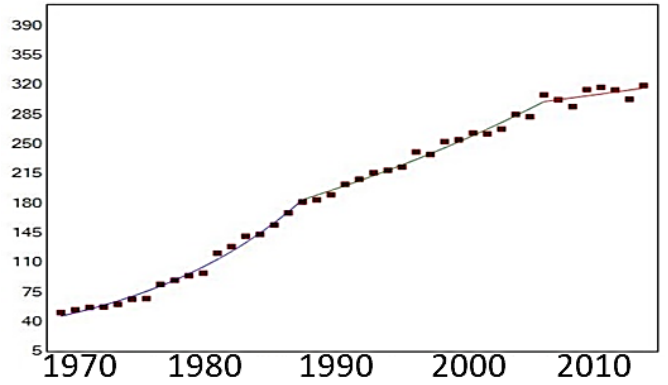
Can we really prevent cancer?

Smoking and Lung Cancer









Year

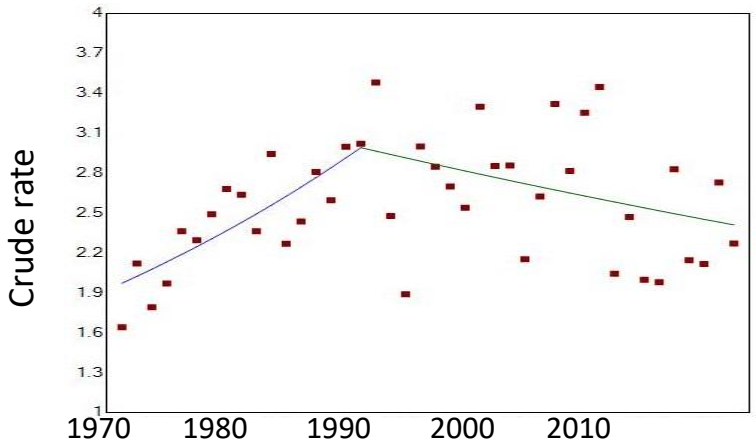
Younger Age Groups

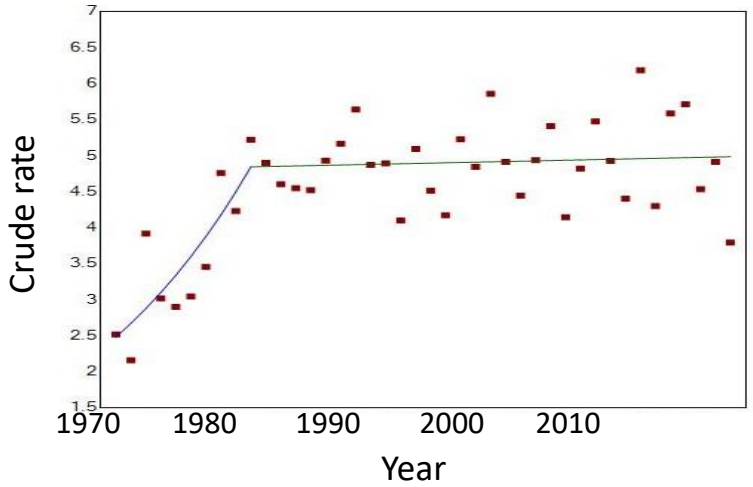
Year

Older Age Groups

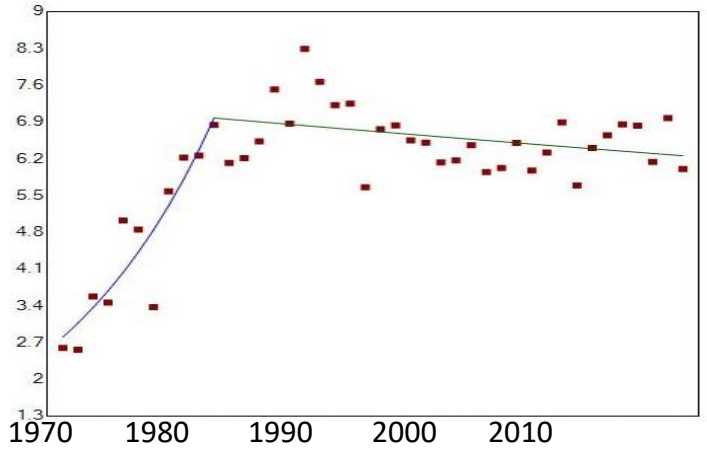
Can we really prevent cancer?

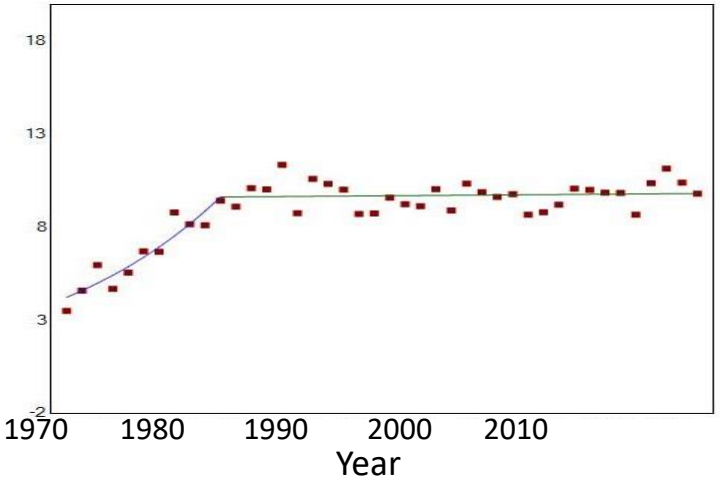
UV Exposure and Melanoma





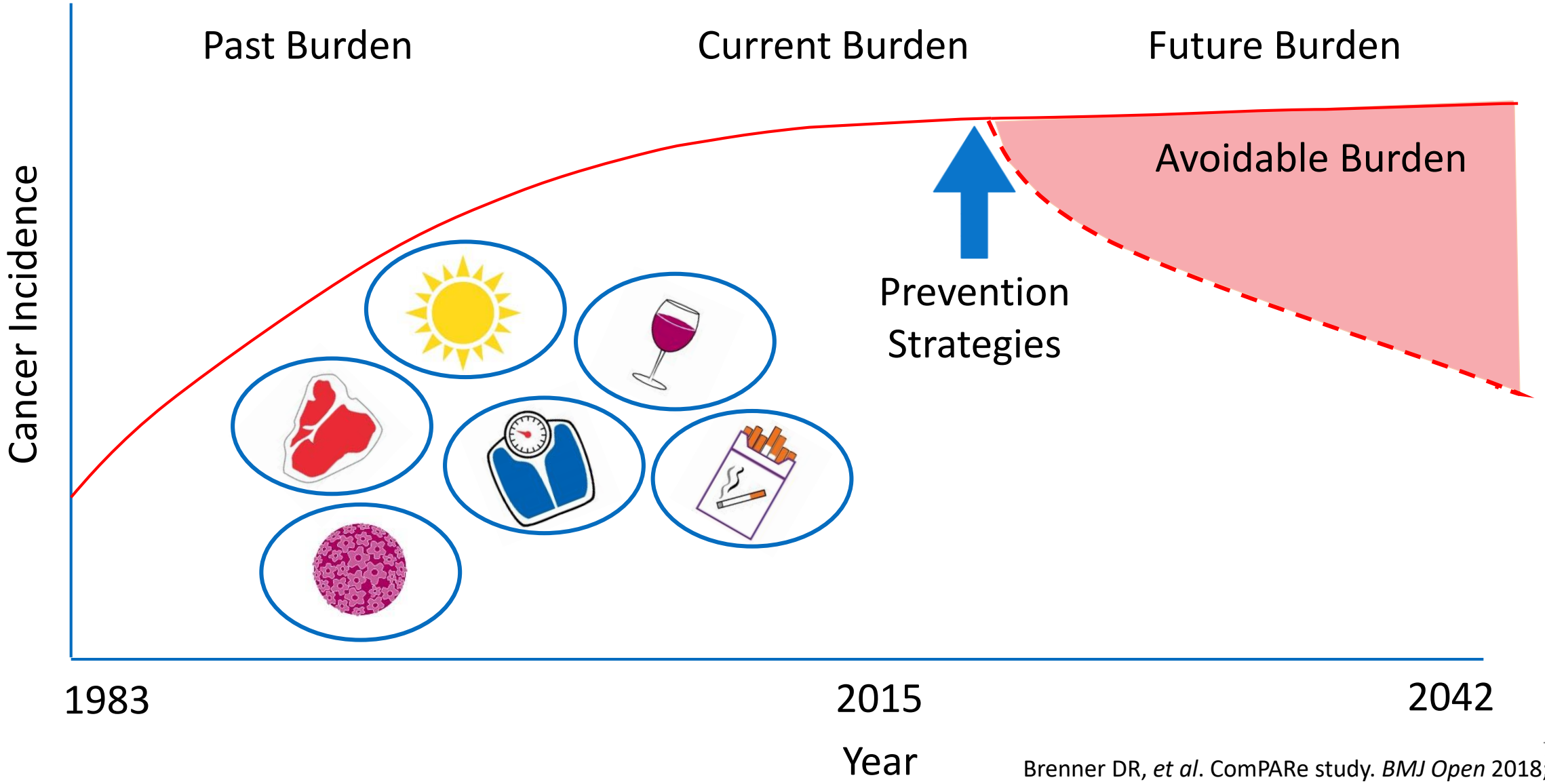
20-29 years





30-39 years

What do we know?



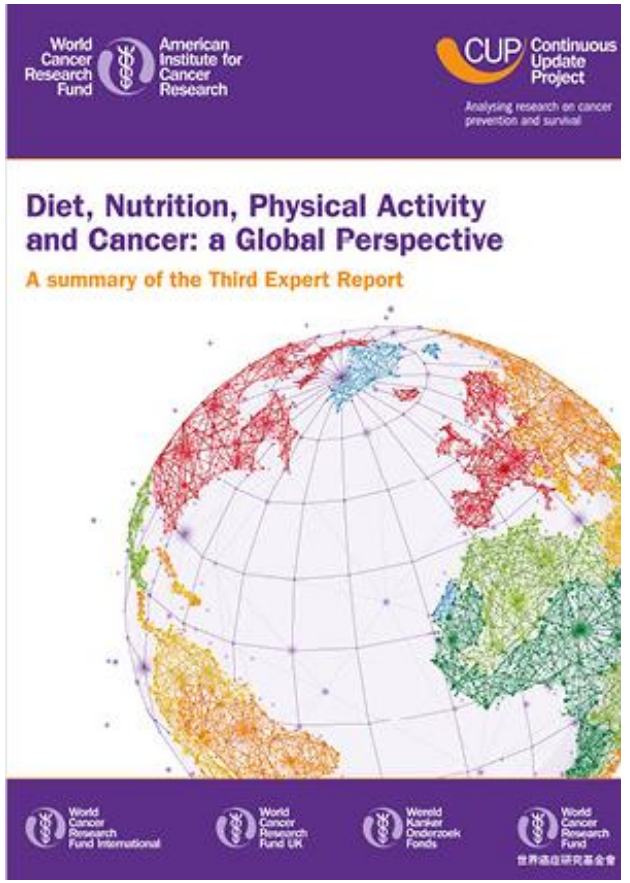
Brenner DR, *et al*. ComPARe study. *BMJ Open* 2018;8:e022378.

How do we know?

International Agency Research on Cancer

World Health Organization

World Cancer Research Fund International



How do we know?

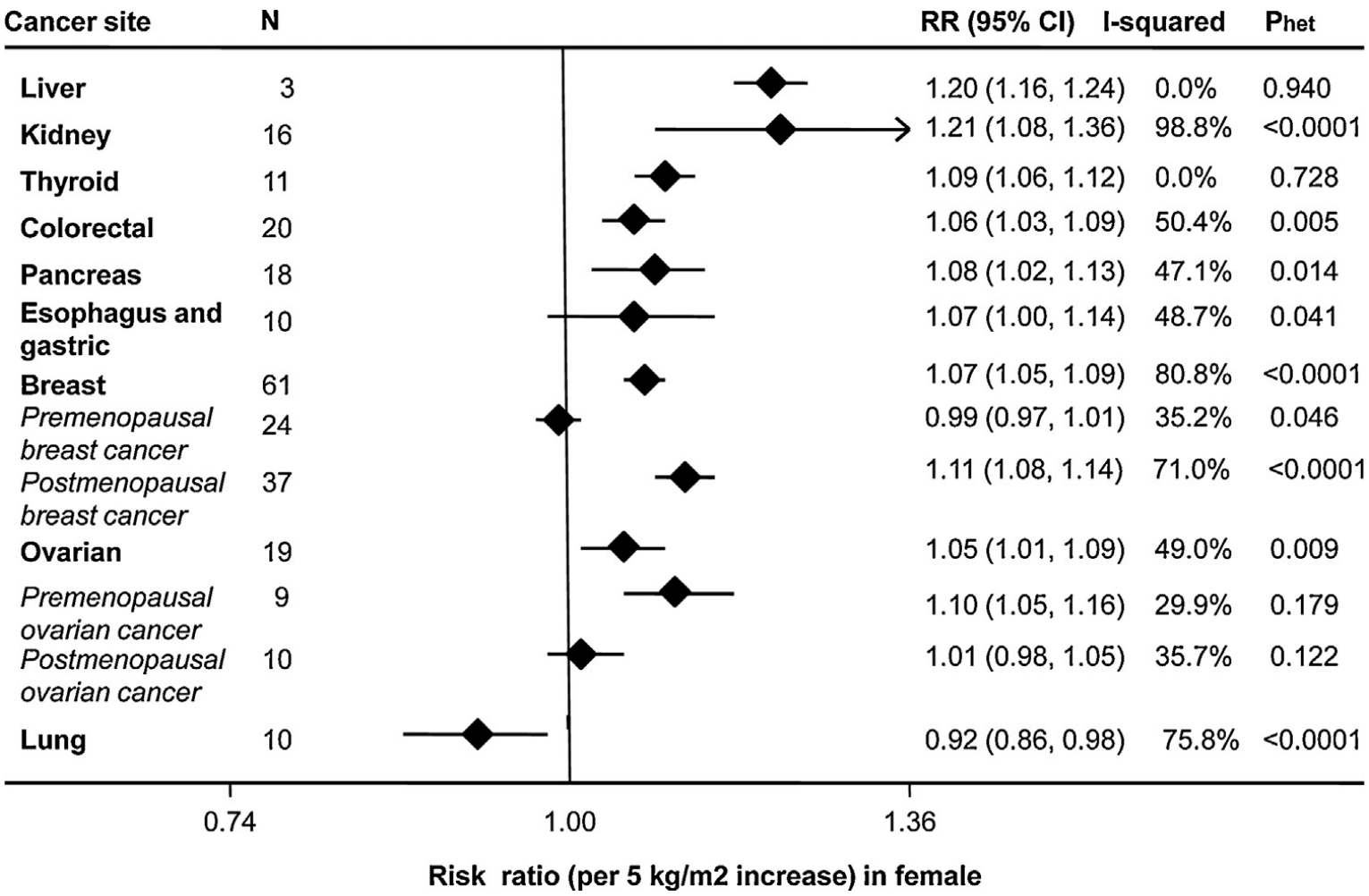
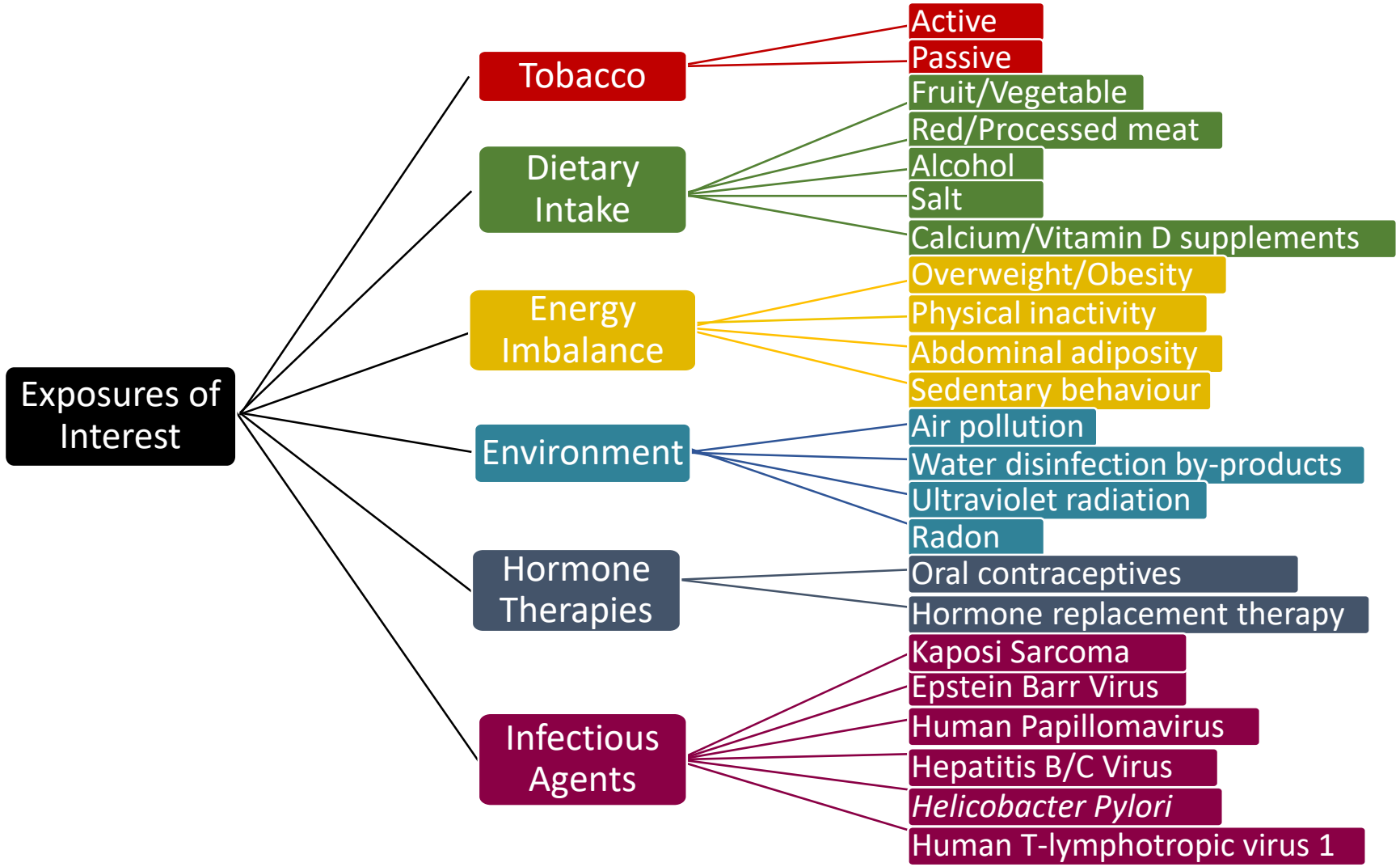


Fig 3. Summary of the RRs (per 5 kg/m^2 increase) by cancer site in women

How do we know?



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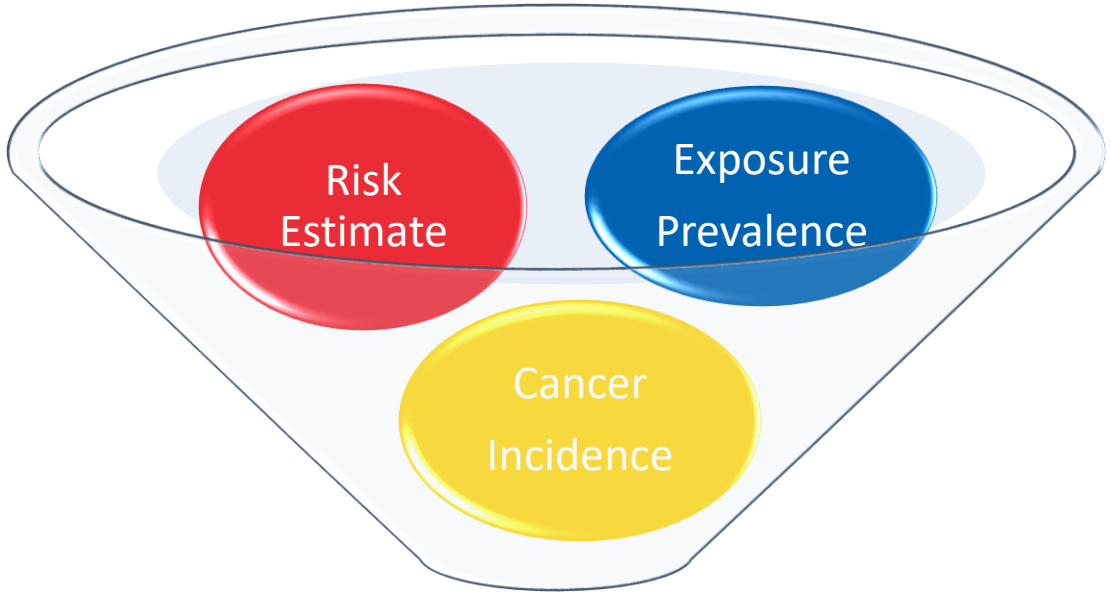


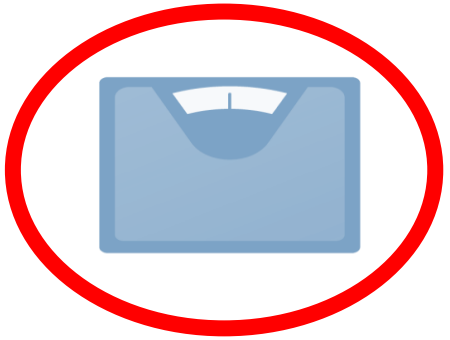
$$PAR = \frac{P_e\ (RR-1)}{P_e\ (RR-1)+1}$$

$$Excess\ Attributable\ Cases = PAR \times Incident\ Cancer\ Cases$$

How do we know?

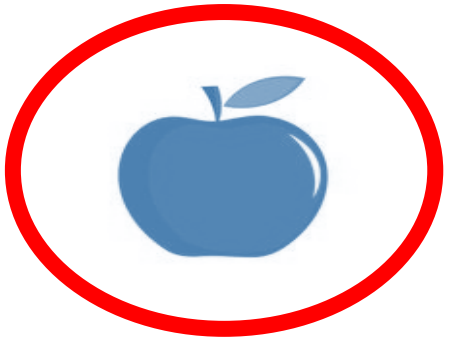
Prevention Targets

≥ 150 mins/week



< 25kg/m²

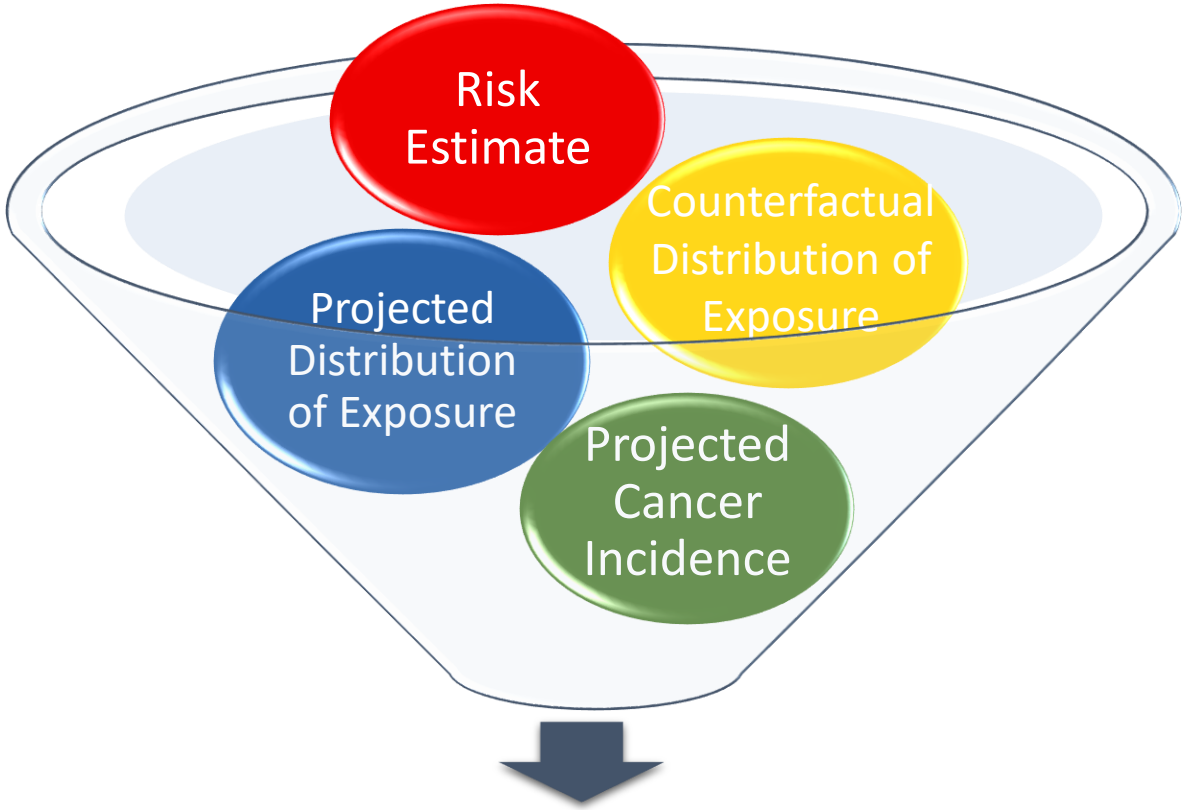
No intake



≥ 4 servings/day

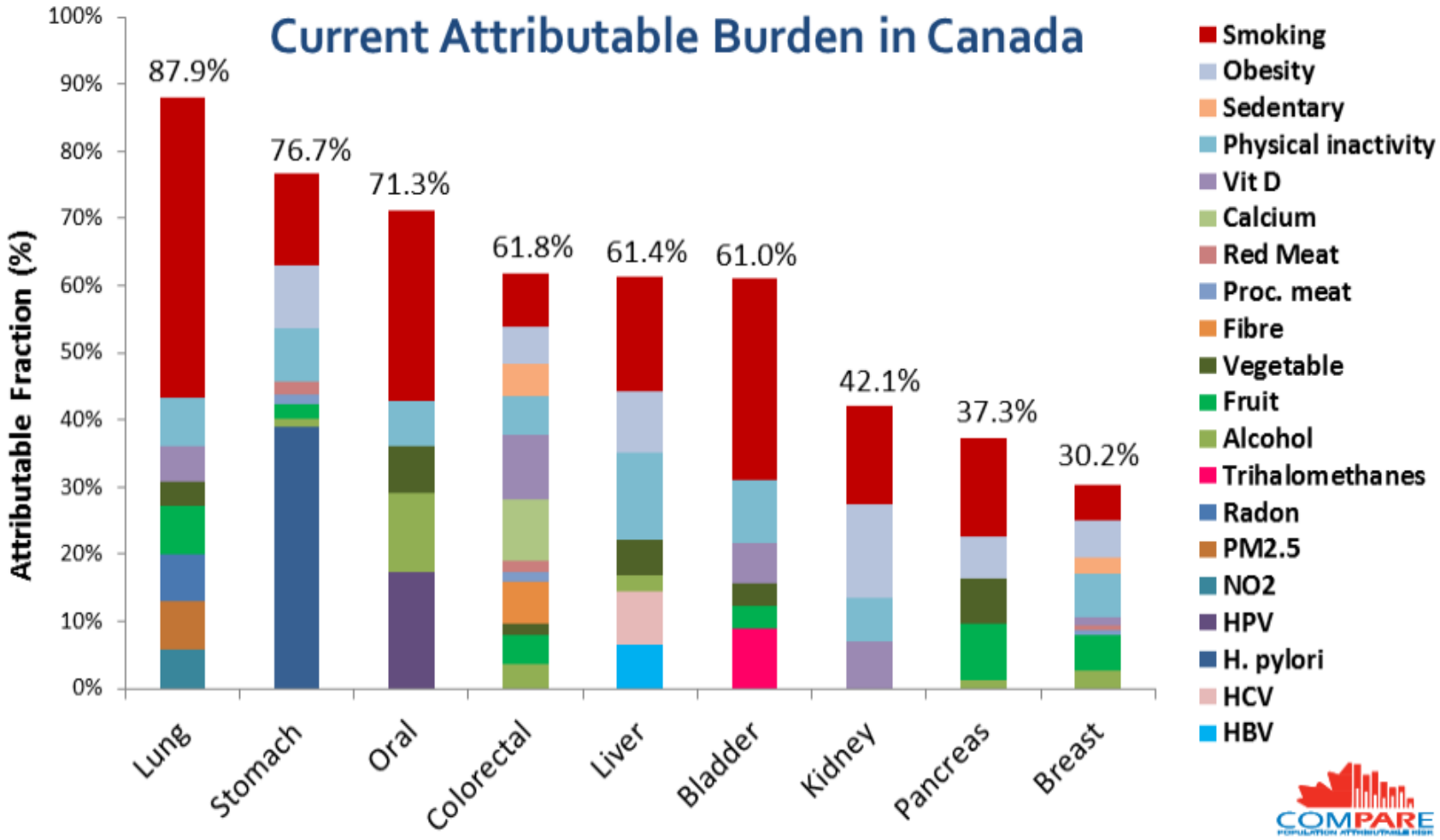
Based on National or International Guidelines*

How do we know?



$$PIF = \frac{\int_{x=0}^{m} RR(x)P(x)dx - \int_{x=0}^{m} RR(x)P'(x)dx}{\int_{x=0}^{m} RR(x)P(x)dx}$$

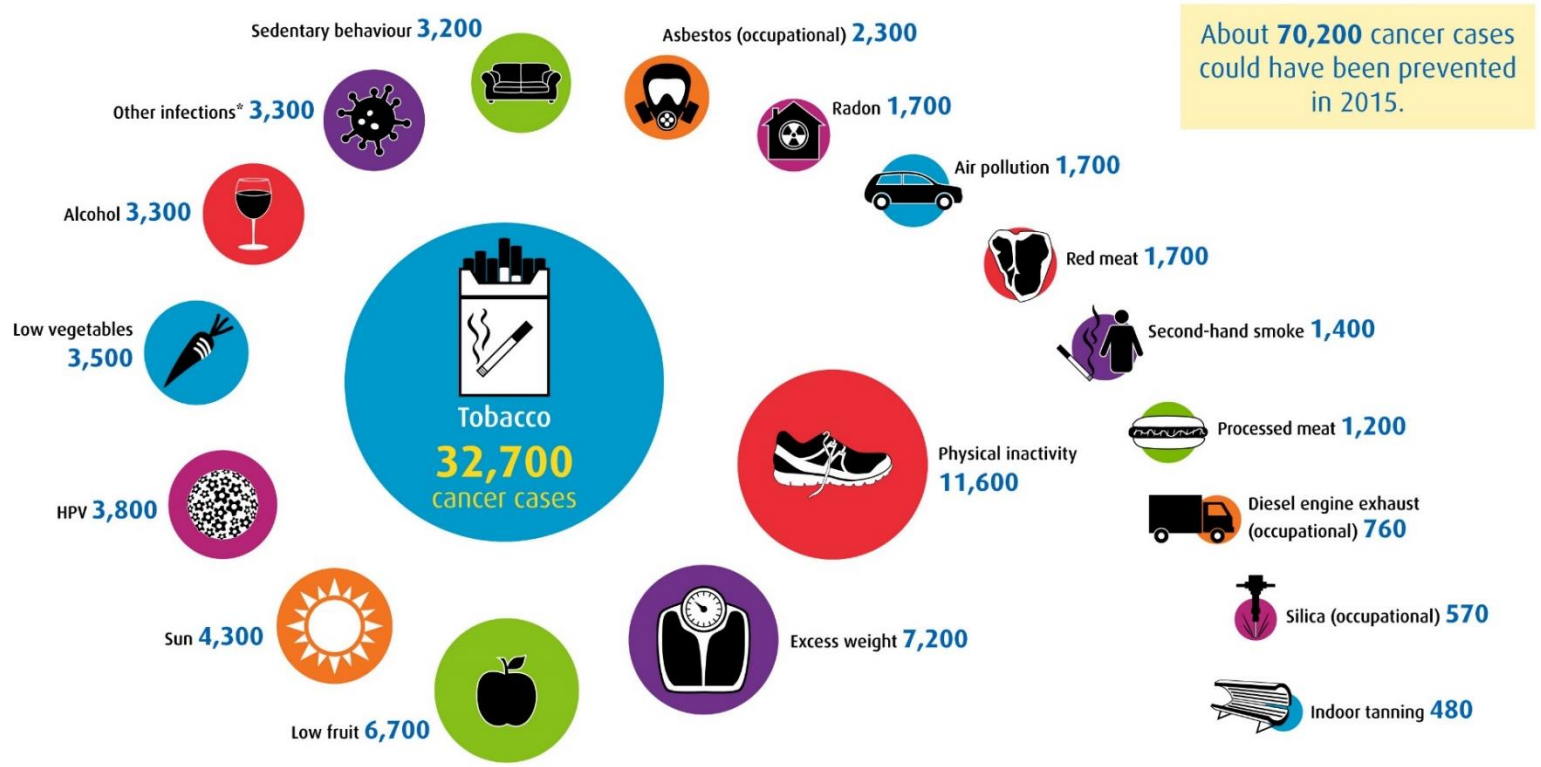
What do we know?



What do we know?

Number of cancer cases that could be prevented in Canada

About 4 in 10 cancer cases can be prevented through healthy living and policies that protect the health of Canadians.



Not all risk factors have the same impact on cancer risk. **This image shows the number of cancer cases diagnosed in 2015 that are due to key modifiable risk factors.****

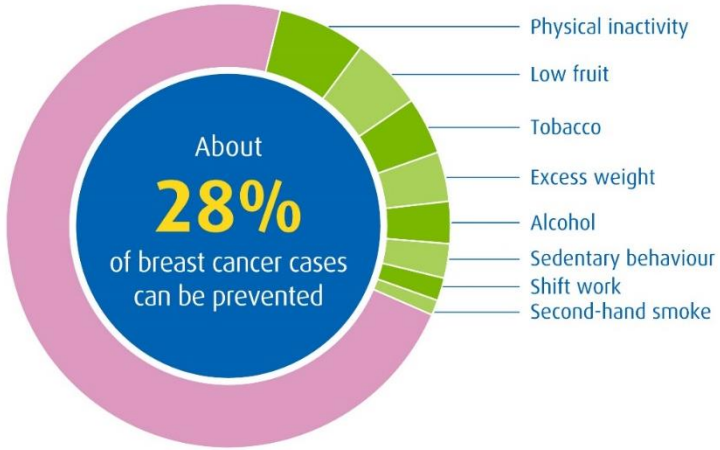
*Other infections category includes Epstein-Barr virus (EBV), hepatitis B virus (HBV), hepatitis C virus (HCV), *Helicobacter pylori* bacteria (*H. pylori*), human herpesvirus type 8 (HHV-8) and human T-cell leukemia/lymphoma virus type 1 (HTLV-1).
**See website for details on data and risk factor definitions.

prevent.cancer.ca

What do we know?

Preventing breast cancer in Canada

Breast cancer is the most commonly diagnosed cancer among Canadian women.



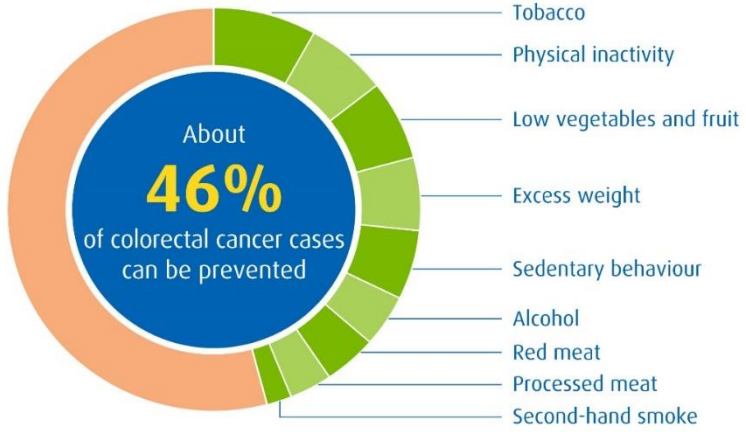
About **7,000** breast cancer cases could have been prevented in 2015.

Together, we can reduce the number of breast cancer cases in the future by increasing physical activity, increasing healthy diets and decreasing tobacco smoking

prevent.cancer.ca

Preventing colorectal cancer in Canada

Colorectal cancer is the second most commonly diagnosed cancer in Canada.



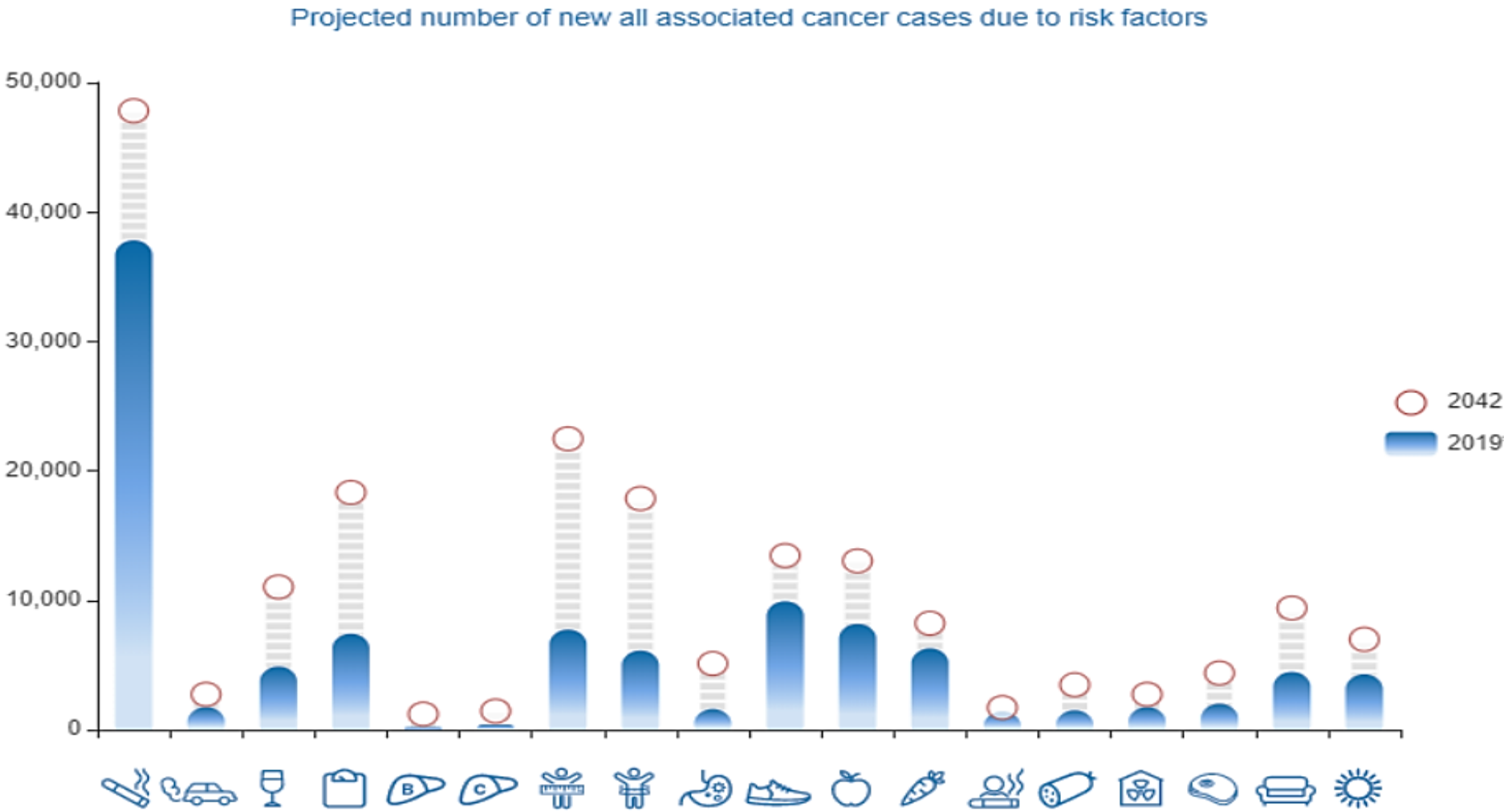
About **10,300** colorectal cancer cases could have been prevented in 2015.

Together, we can reduce the number of colorectal cancer cases in the future by decreasing tobacco smoking, increasing physical activity and increasing healthy eating

prevent.cancer.ca

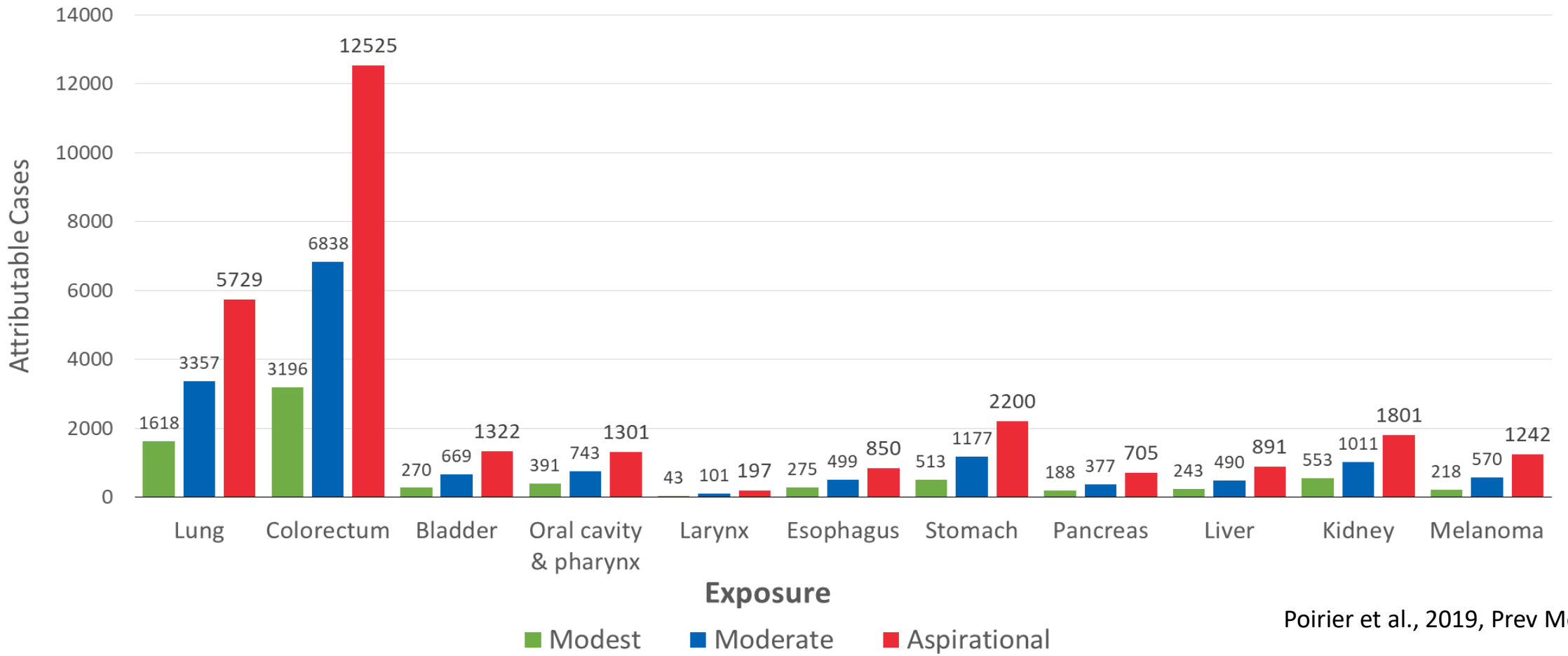
What do we know?

Growing burden of attributable cancers



What do we know?

Projected number of cancer cases preventable in 2042 based on modest, moderate and aspirational intervention scenarios

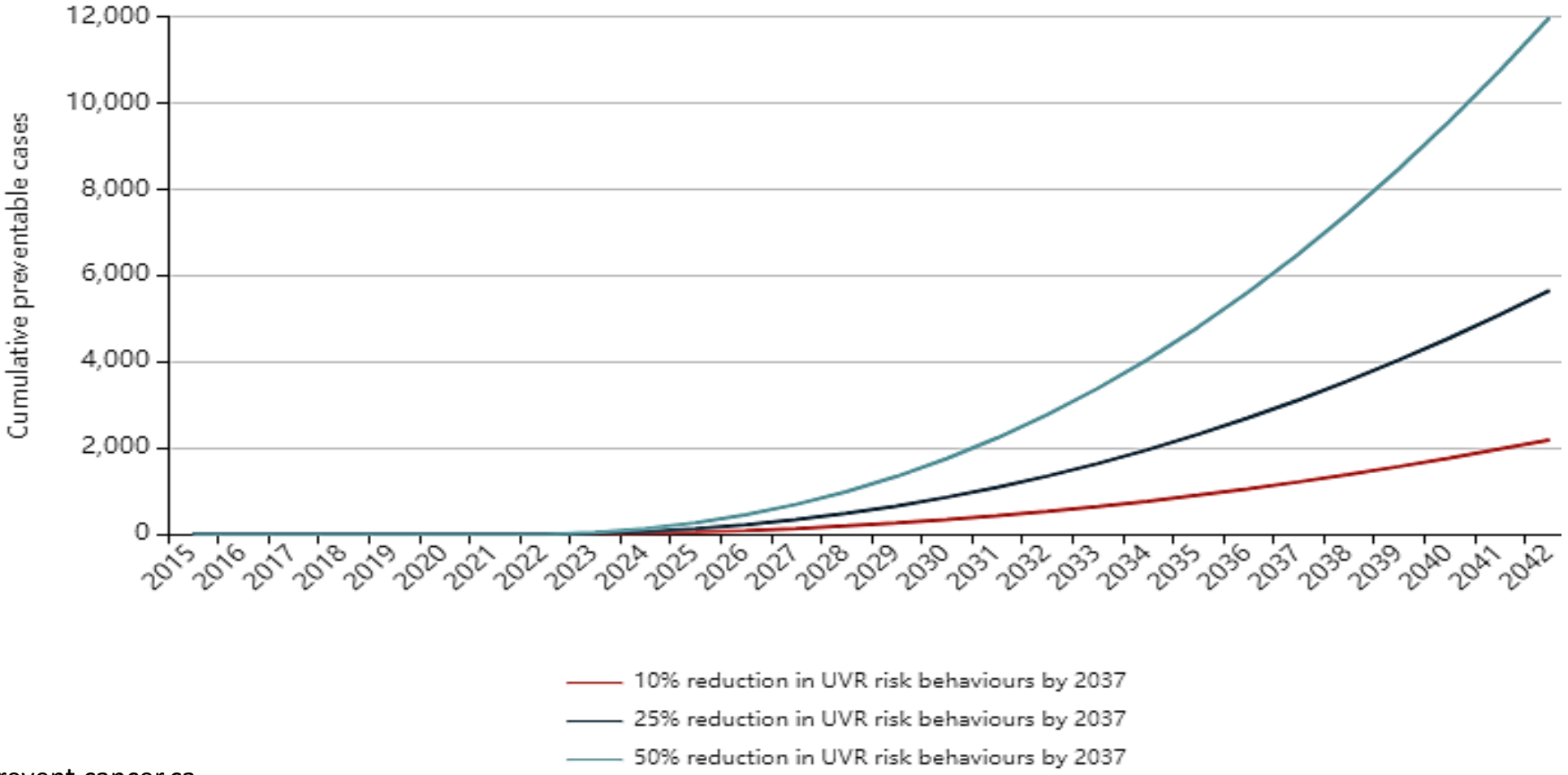


Poirier et al., 2019, Prev Med

https://prevent.cancer.ca

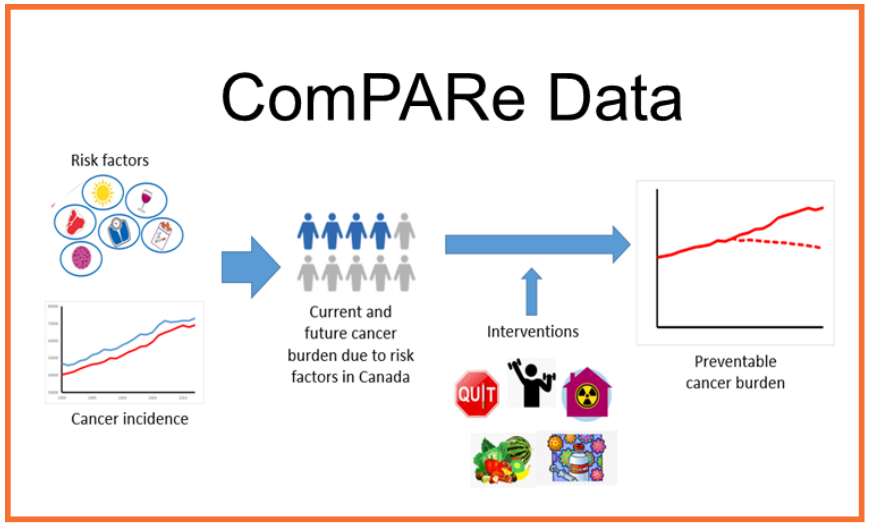
What do we know?

Cumulative number of preventable cancer cases due to UV risk behaviours in Canada for both sexes combined through prevention targets, up to 2042



https://prevent.cancer.ca

How do we know?



OncoSim

All cancer model

In-depth model

Status quo

Number of cancer cases attributable to risk factor

Number of cancer deaths attributable to risk

Cancer costs attributable to risk factor

Intervention scenario

Incidence with intervention

Deaths with intervention

Costs with intervention

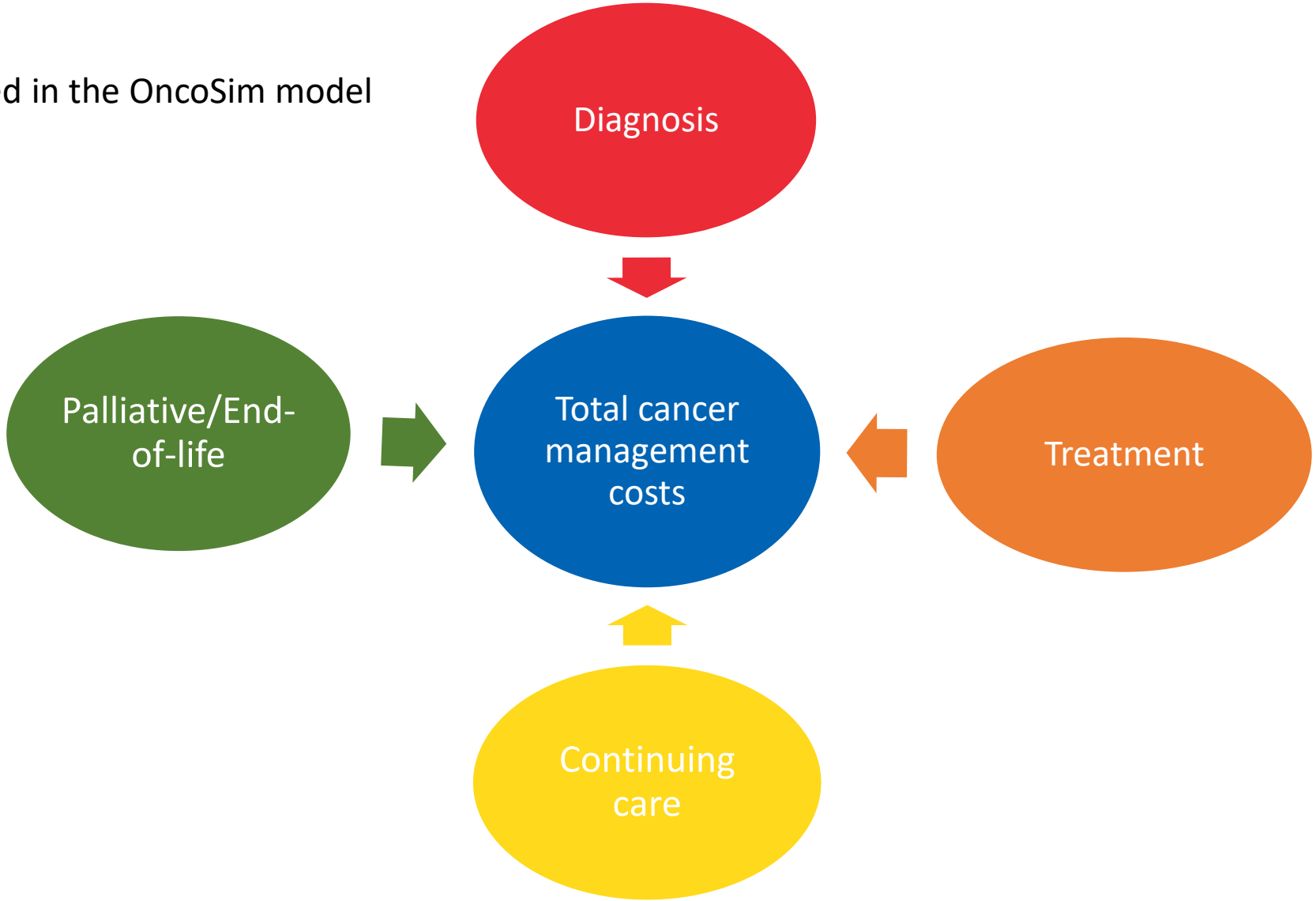
Incidence prevented

Deaths prevented

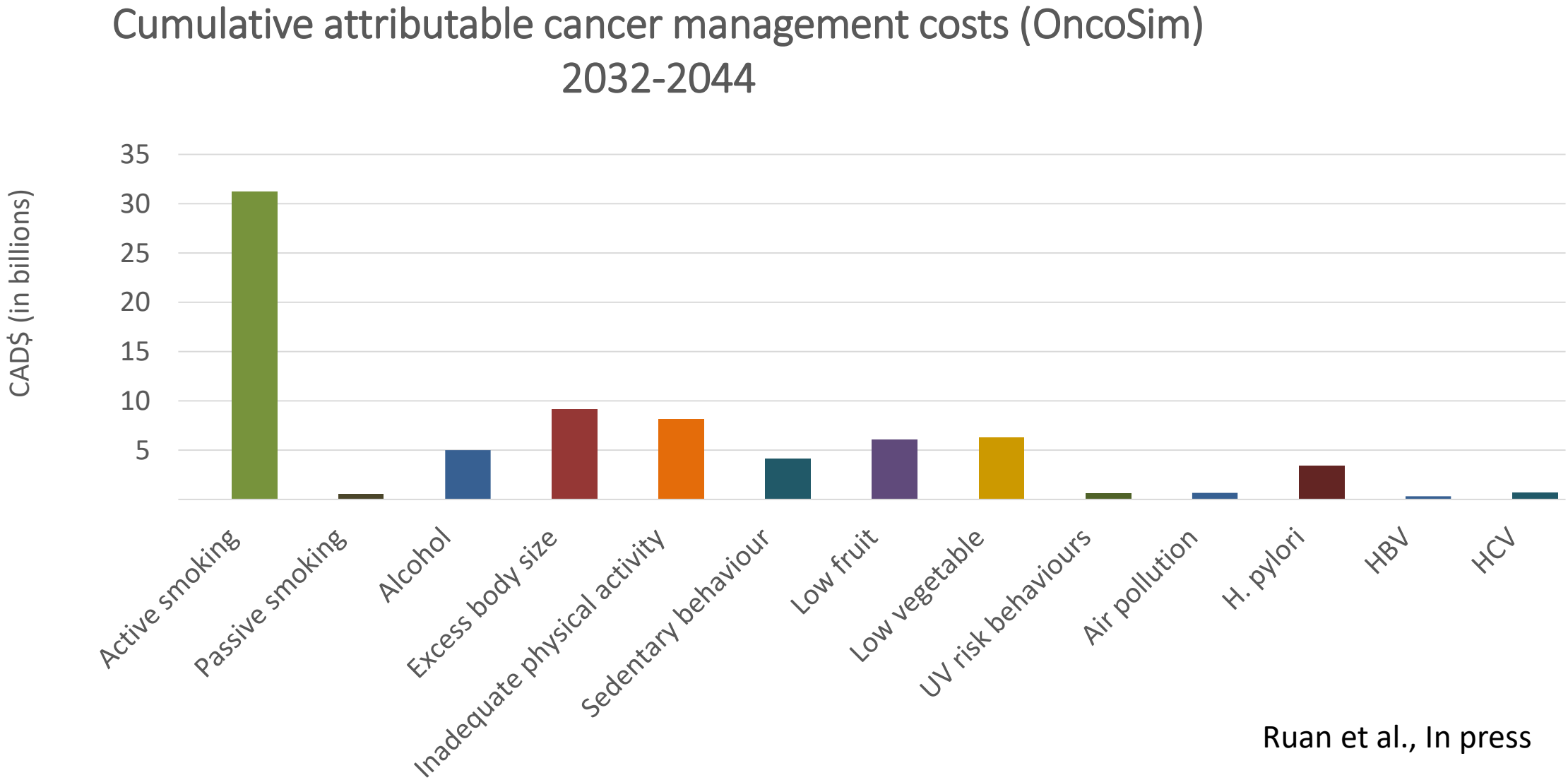
Costs saved

How do we know?

Cancer costs included in the OncoSim model



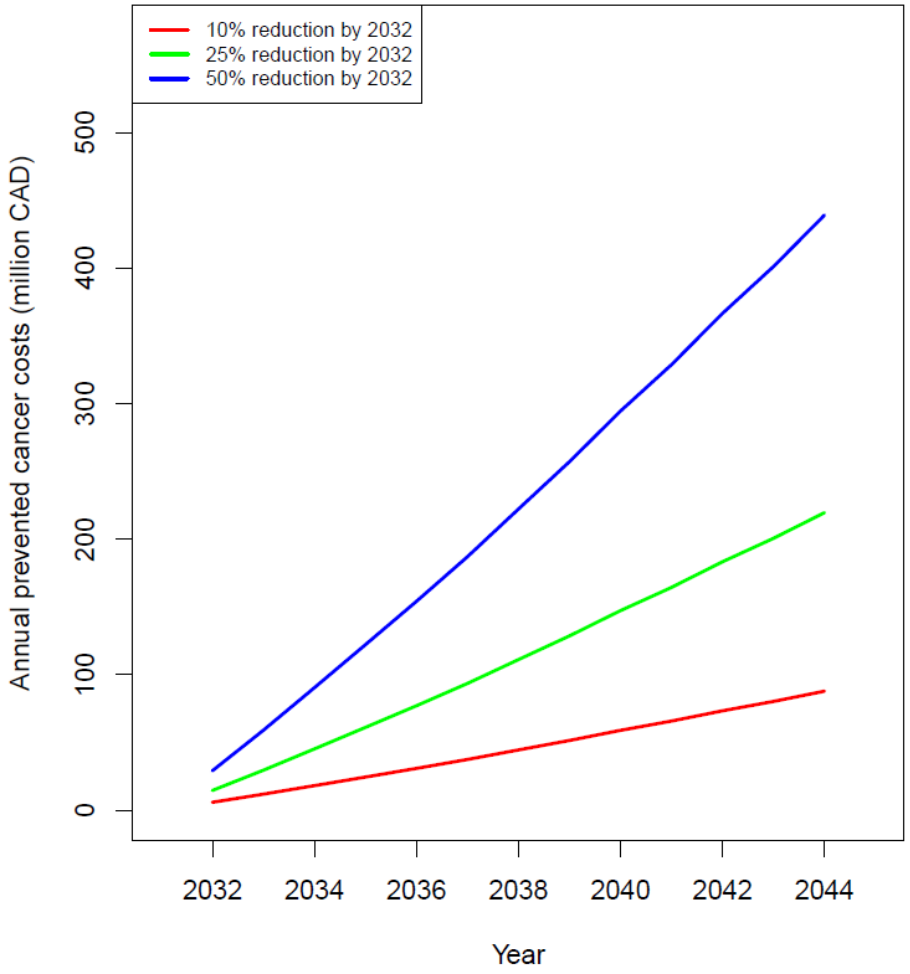
What do we know?



Ruan et al., In press

What do we know?

Annual Prevented Costs
Attributable to Excess Body Size



Cumulative Prevented Costs
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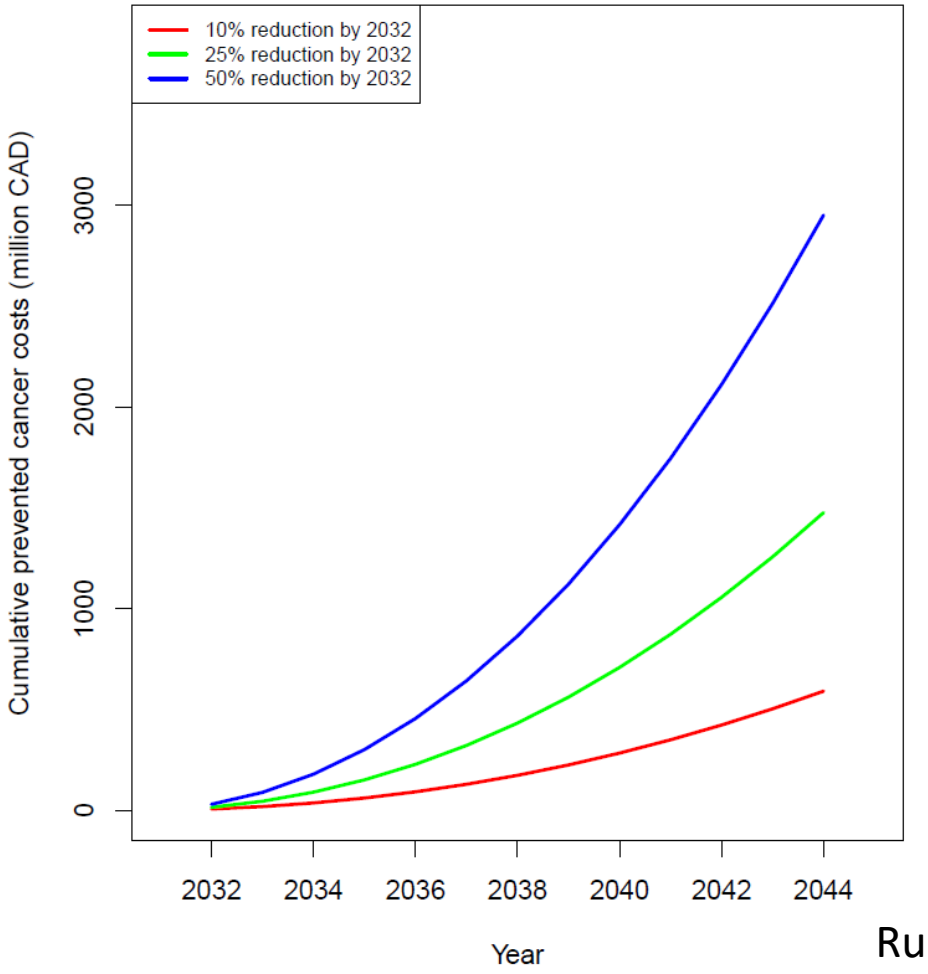


Ruan et al., In press

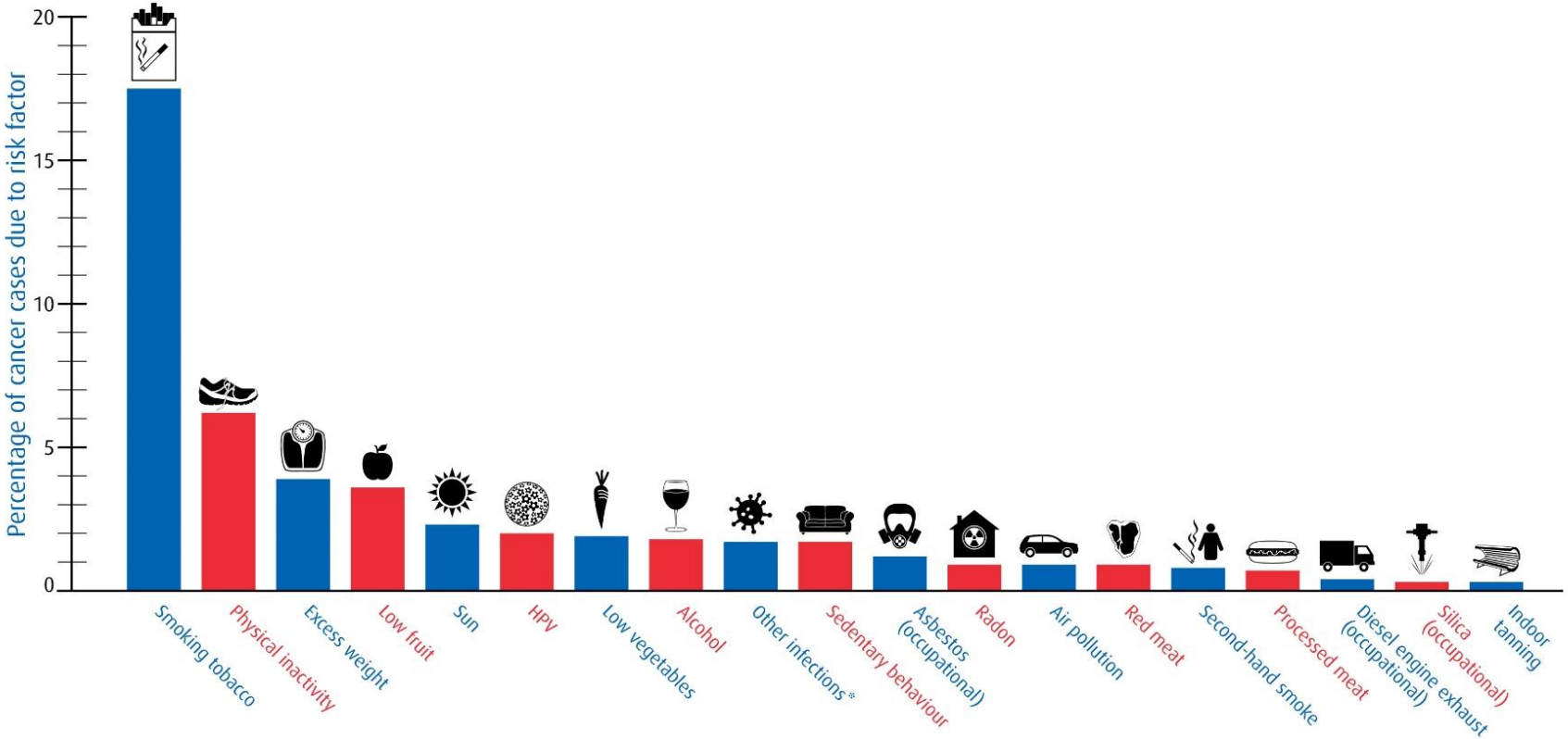
Limitations

- Risk estimates for associations between risk factors and cancers were based on best available evidence internationally
- Prevalence of exposure to risk factors taken from best available national surveys
- Multiple risk factors could not be modelled simultaneously for the economic burden of cancer or preventable cancer mortality
- OncoSim model
  - Relies on historical data and does not account for changes in risk factor prevalence or costs of cancer care over the time period that was examined
  - Only simulates the outcome of direct cancer management costs

What can we do now?

Percentage of all cancer cases that could be prevented in Canada

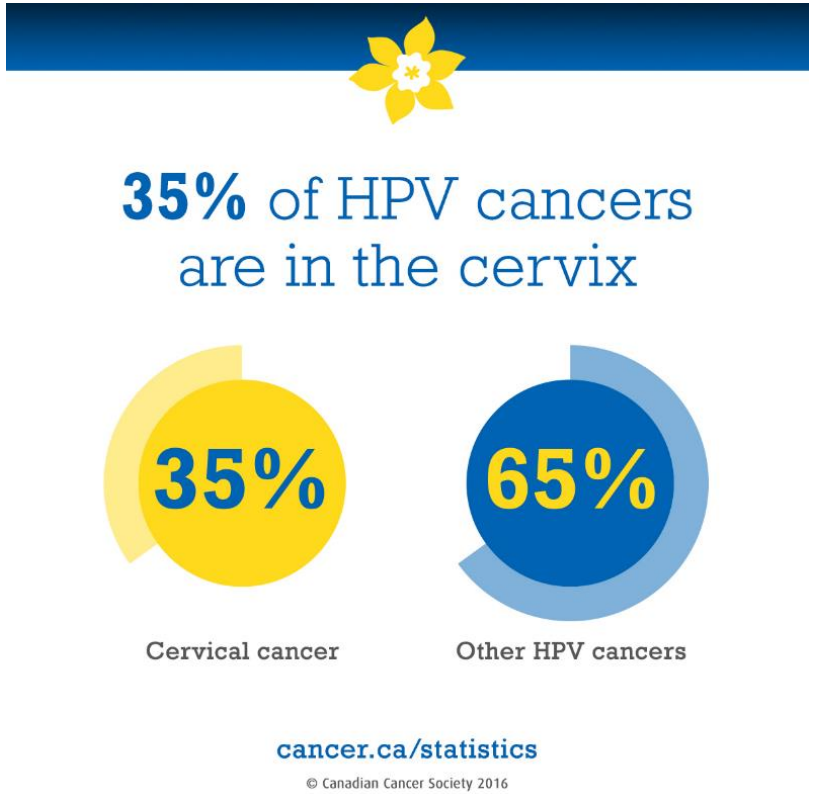
About 4 in 10 cancer cases can be prevented through healthy living and policies that protect the health of Canadians.



Not all risk factors have the same impact on cancer risk. **This image shows key modifiable risk factors and the percentage of cancer cases related to them.****

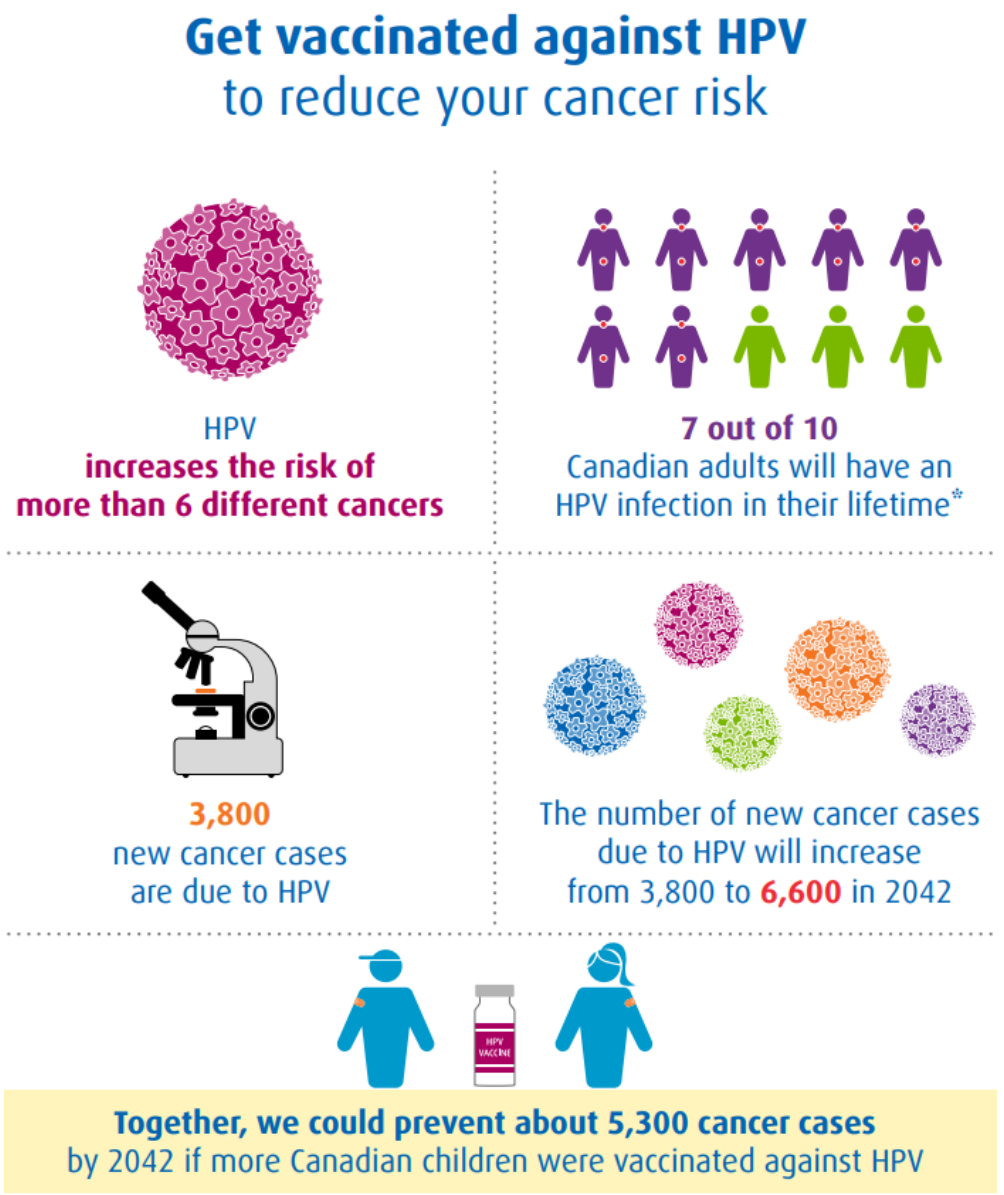
*Other infections category includes Epstein-Barr virus (EBV), hepatitis B virus (HBV), hepatitis C virus (HCV), *Helicobacter pylori* bacteria (*H. pylori*), human herpesvirus type 8 (HHV-8) and human T-cell leukemia/lymphoma virus type 1 (HTLV-1).
**See website for details on data and risk factor definitions.

What can we do now?



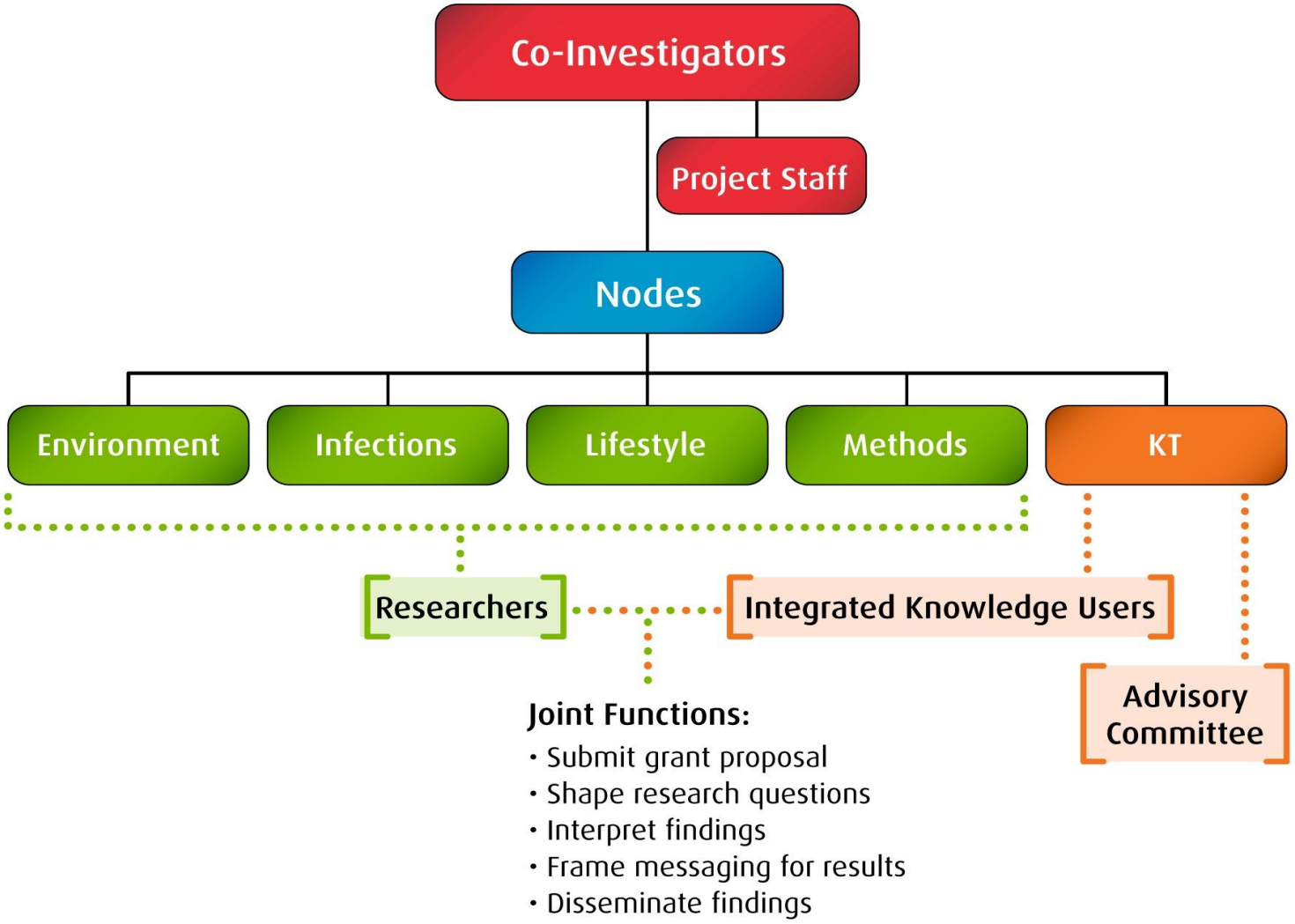
- Mortality and incidence have declined dramatically in past 30 years
- HPV causes almost all cases of cervical cancer
- Screening with **Pap testing**
- **HPV Vaccination**

What can we do now?



What can we do now?

Organizational and Integrated Knowledge Translation model for the ComPARe study



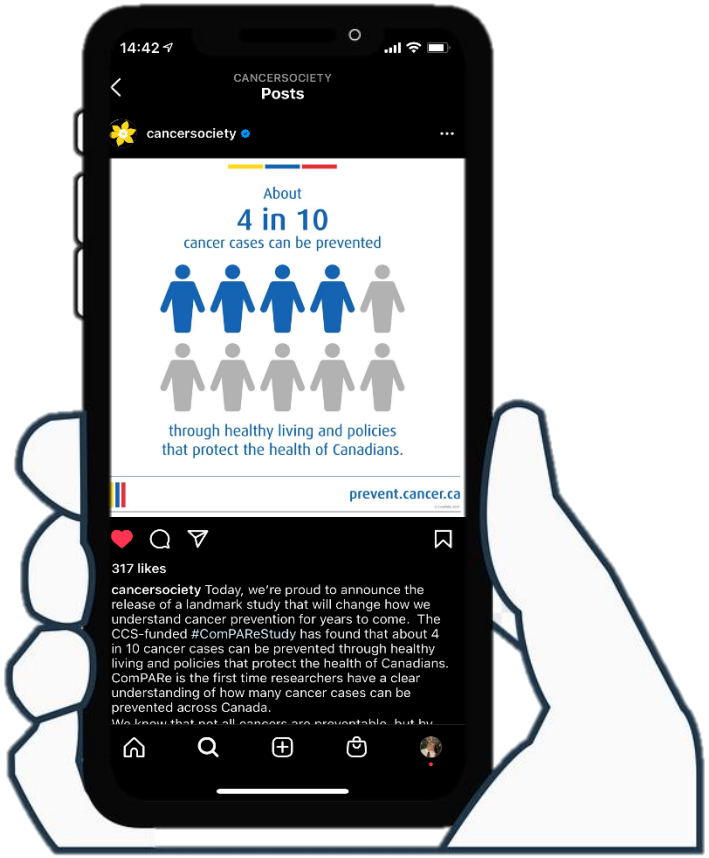
Audiences for KT outreach

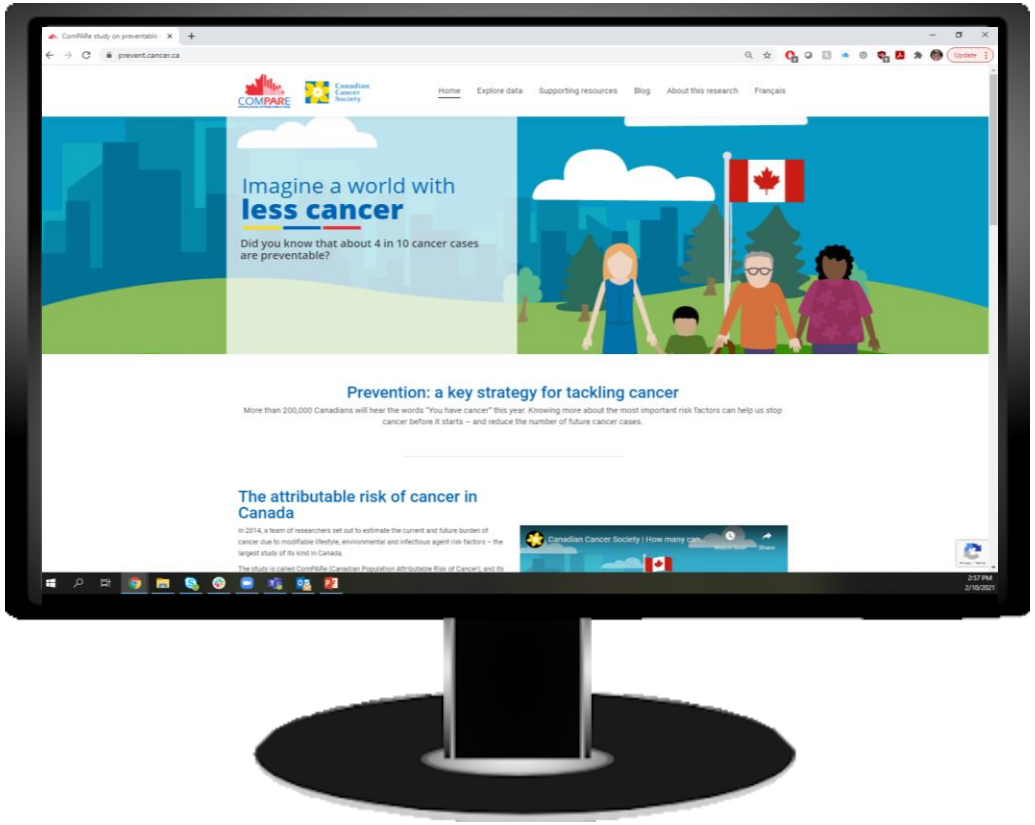
- Media
- Public
- Health care professionals
- Advocates
- Government
- Researchers

What can we do now?

ComPARe KT Advisory Committee – Turning Results to Action

What can we do now?





What can we do now?

The Strategy's priorities and actions

PRIORITY 1

Decrease the risk of people getting cancer

Up to 4 in 10 cancer cases can be prevented.[24] A number of protective interventions play a critical role in preventing cancer, including healthier lifestyles, healthier communities and reduced exposure to carcinogens at home and work.

Canadians place a high priority on supporting efforts to prevent cancer. The cancer community and sectors such as primary care, public health and workplace regulators have key roles to play in supporting healthier living, protecting Canadians from harmful chemicals and toxins, and expanding appropriate cancer vaccination programs.

The Strategy focuses on key priorities where coordinated, pan-Canadian actions can make the most impact on reducing the burden of cancer from 2019 to 2029: helping people to stop smoking or avoid smoking in the first place; supporting cancer prevention approaches and interventions that drive health and wellness and adopting practices proven to reduce the risk of cancer.

All of this work needs to be done in alignment with public health organizations across Canada to achieve the greatest benefit for Canadians.

ACTIONS

1. Help people to stop smoking or not start in the first place and live healthier lives

Not smoking reduces the risk for a number of diseases, including cancer. Smoking is responsible for more than 45,000 deaths each year in Canada, which is nearly 1 in 5 deaths in the country.[25] For people who smoke, quitting is the single most important thing they can do to reduce their risk of lung cancer. For people already diagnosed with any cancer, quitting smoking can improve the effectiveness of treatment, because tobacco use interferes with the effectiveness of many cancer therapies.[26]

Smoking also has a disproportionate impact on already underserviced communities. For example, two in three adults in Nunavut are smokers, and Inuit have one of the highest rates of lung cancer in the world.[27]

RECOMMENDATION

Implement an annual cost recovery fee on the tobacco industry

The Canadian Cancer Society recommends that the federal government implement an annual cost recovery fee on the tobacco industry to provide full reimbursement for the $66 million annual cost of the federal tobacco control strategy.

We propose that companies would pay a fee based on market share. This approach would be similar to the federal cannabis annual fee to recover $112 million annually by 2021–22[3] and the US Food and Drug Administration tobacco fee in place since 2009, which is recovering US $712 million annually.[4] If there can be a federal cost recovery fee on the cannabis industry, a cost recovery fee on the tobacco industry is also highly feasible.

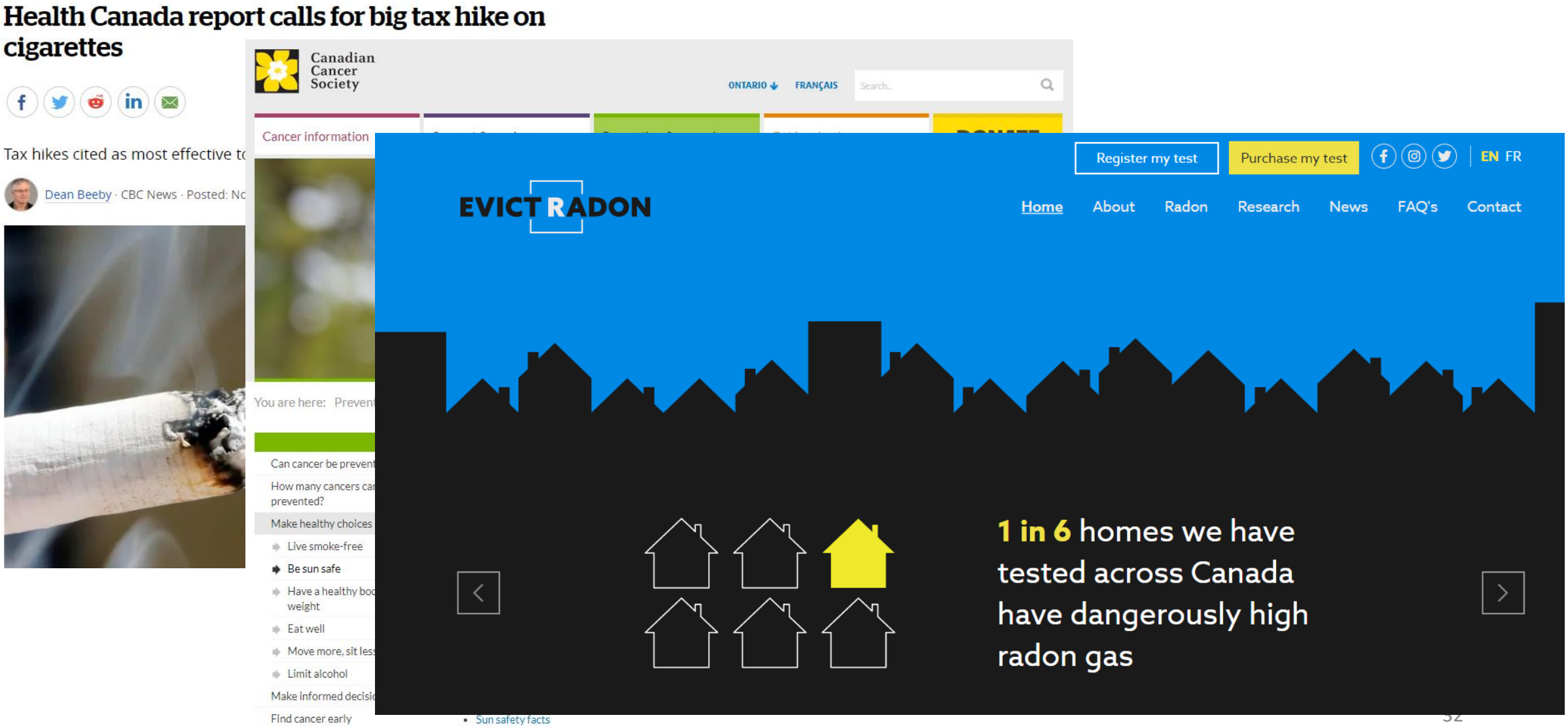
Tobacco use is the leading preventable cause of disease and death in Canada, killing 45,000 Canadians annually, including about 30% of all cancer deaths. The Canadian Population Attributable Risk of Cancer (ComPARe) study, funded by the Canadian Cancer Society, identified tobacco as the leading preventable cause of cancer.[5] While significant progress has been made, there are still 5 million Canadians who smoke[6] and an unacceptably high number of young people who begin smoking each year. An enormous amount of work needs to be done to achieve the objective of under 5% of Canadians using tobacco by 2035. If we reach this objective, then we could prevent over 50,000 cancer cases due to tobacco by 2042.[5]

The tobacco industry has caused the tobacco epidemic and should be held accountable. It should pay for government costs to respond to this epidemic.

A cost recovery fee of $66 million is easily feasible for the tobacco industry to bear given the additional $2 billion in revenue they have generated as a result of windfall net-of-tax price increases in recent years. A cost recovery fee would generate $66 million in incremental annual government revenue, which could be used for government priorities.

A national 2018 Ipsos opinion poll found that by a margin of 84% to 16% Canadians supported "a measure that would make tobacco companies pay the costs of Health Canada's programs to reduce youth smoking."[7]

What can we do now?



Conclusions – what did WE learn?

- Integrate & Collaborate
- Plan to disseminate
- Engage early
- Be flexible
- Be pragmatic

Next Steps

- New & emerging exposures
- Let’s act on it!
  - Implementation and evaluation
- Policy, practice, personal

https://prevent.cancer.ca

https://data.prevent.cancer.ca

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