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The CANHEART Health Index: a tool for monitoring the cardiovascular health of the Canadian population



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RESEARCH

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ABSTRACT

Background: To comprehensively examine the cardiovascular health of Canadians, we developed the Cardiovascular Health in Ambulatory Care Research Team (CANHEART) health index. We analyzed trends in health behaviours and factors to monitor the cardiovascular health of the Canadian population.

Methods: We used data from the Canadian Community Health Survey (2003–2011 [excluding 2005]; response rates 70%–81%) to examine trends in the prevalence of 6 cardiovascular health factors and behaviours (smoking, physical activity, fruit and vegetable consumption, overweight/obesity, diabetes and hypertension) among Canadian adults aged 20 or older. We defined ideal criteria for each of the 6 health metrics. The number of ideal metrics was summed to create the CANHEART health index; values range from 0 (worst) to 6 (best or ideal). A separate CANHEART index was developed for youth age 12–19 years; this index included 4 health factors and behaviours (smoking, physical activity, fruit and vegetable consumption and overweight/obesity). We determined the prevalence of ideal cardiovascular health and the mean CANHEART health index score, stratified by age, sex and province.

Results: During the study period, physical activity and fruit and vegetable consumption increased and smoking decreased among Canadian adults. The prevalence of overweight/obesity, hypertension and diabetes increased. In 2009–2010, 9.4% of Canadian adults were in ideal cardiovascular health, 53.3% were in intermediate health (4–5 healthy factors or behaviours), and 37.3% were in poor cardiovascular health (0–3 healthy factors or behaviours). Twice as many women as men were in ideal cardiovascular health (12.8% vs. 6.1%). Among youth, the prevalence of smoking decreased and the prevalence of overweight/obesity increased. In 2009–2010, 16.6% of Canadian youth were in ideal cardiovascular health, 33.7% were in intermediate health (3 healthy factors or behaviours), and 49.7% were in poor cardiovascular health (0–2 healthy factors or behaviours).

Interpretation: Fewer than 1 in 10 Canadian adults and 1 in 5 Canadian youth were in ideal cardiovascular health from 2003 to 2011. Intensive health promotion activities are needed to meet the Heart and Stroke Foundation of Canada's goal of improving the cardiovascular health of Canadians by 10% by 2020 as measured by the CANHEART health index.

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Cardiovascular disease, which includes heart disease and stroke, is the second leading cause of death in Canada and is associated with disability, low quality of life and high economic costs.¹ Although much previous research has focused on the contribution of individual health behaviours and factors to the risk of cardiovascular disease, there has been little focus on comprehensively examining the cardiovascular health of the population.

In 2010, the American Heart Association introduced a definition of ideal cardiovascular health based on 7 health factors and behaviours (smok-

ing, body mass index [BMI], diet, physical activity, and blood pressure, glucose and cholesterol levels).² Criteria were established to define ideal levels of each health factor or behaviour. The American Heart Association set a goal of improving the cardiovascular health of Americans by 20% by 2020. Studies have shown that meeting 6–7 metrics of ideal cardiovascular health is associated with an 89% lower incidence of cardiovascular disease,³ 76% reduction in stroke incidence,⁴ 70% reduction in ischemic heart disease mortality⁵ and 51% lower incidence of cancer⁶ compared with meeting 0 or 1 of the ideal metrics.



Cardiovascular Disease in Canada

- Cardiovascular disease is the 2nd leading cause of death in Canada (behind only cancer)
- Major cause of disability, low quality of life
- High economic burden (~\$22 billion/year, Public Health Agency of Canada, 2009)
- Little research focusing on cardiovascular health of the population

American Heart Association Ideal Cardiovascular Health

- In 2010, the American Heart Association (AHA) developed a new concept of “ideal” cardiovascular health
 - Based on 7 health factors and behaviours associated with cardiovascular outcomes
 - Smoking
 - Body mass index (BMI)
 - Diet
 - Physical activity
 - Blood pressure
 - Plasma glucose
 - Total cholesterol
- Set a strategic impact goal for 2020:
 - “To improve the cardiovascular health of all Americans by 20% by 2020 and to reduce mortality from cardiovascular diseases and stroke by the same amount” (Lloyd-Jones et al., 2010, Circulation)

American Heart Association Ideal Cardiovascular Health

- 1.2% of Americans in ideal cardiovascular health in 2005-2010 (Yang *et al.*, 2012, *JAMA*)
- 16% of American adults meet five or more metrics of ideal cardiovascular health (AHA Statistical Fact Sheet 2013)
- Ideal cardiovascular health is associated with:
 - 89% lower incidence of cardiovascular disease (Follson *et al.*, 2011, *J Am Coll Cardiol*)
 - 70% reduction in ischemic heart disease mortality (Yang *et al.*, 2012, *JAMA*)
 - 51% lower incidence of cancer (Rasmussen-Torvik *et al.*, 2013, *Circulation*)

Objectives

- To develop a Canadian definition of ideal cardiovascular health in collaboration with the Heart and Stroke Foundation of Canada
- To develop separate ideal cardiovascular health definitions for adults 20+ and youth 12-19
- The CANHEART health index will:
 - Enable monitoring of cardiovascular health of the Canadian population
 - Allow setting of impact goals by the Heart and Stroke Foundation of Canada for the reduction of cardiovascular risk factors and mortality



Methods

- Data Source
 - Statistics Canada's Canadian Community Health Survey (CCHS 2003-2011, excluding 2005)
 - Population-based telephone survey
 - Representative of the Canadian Population at provincial and health region levels
- Sample Size
 - 464,883 CCHS respondents for CANHEART health index calculations



Adult CANHEART Health Index

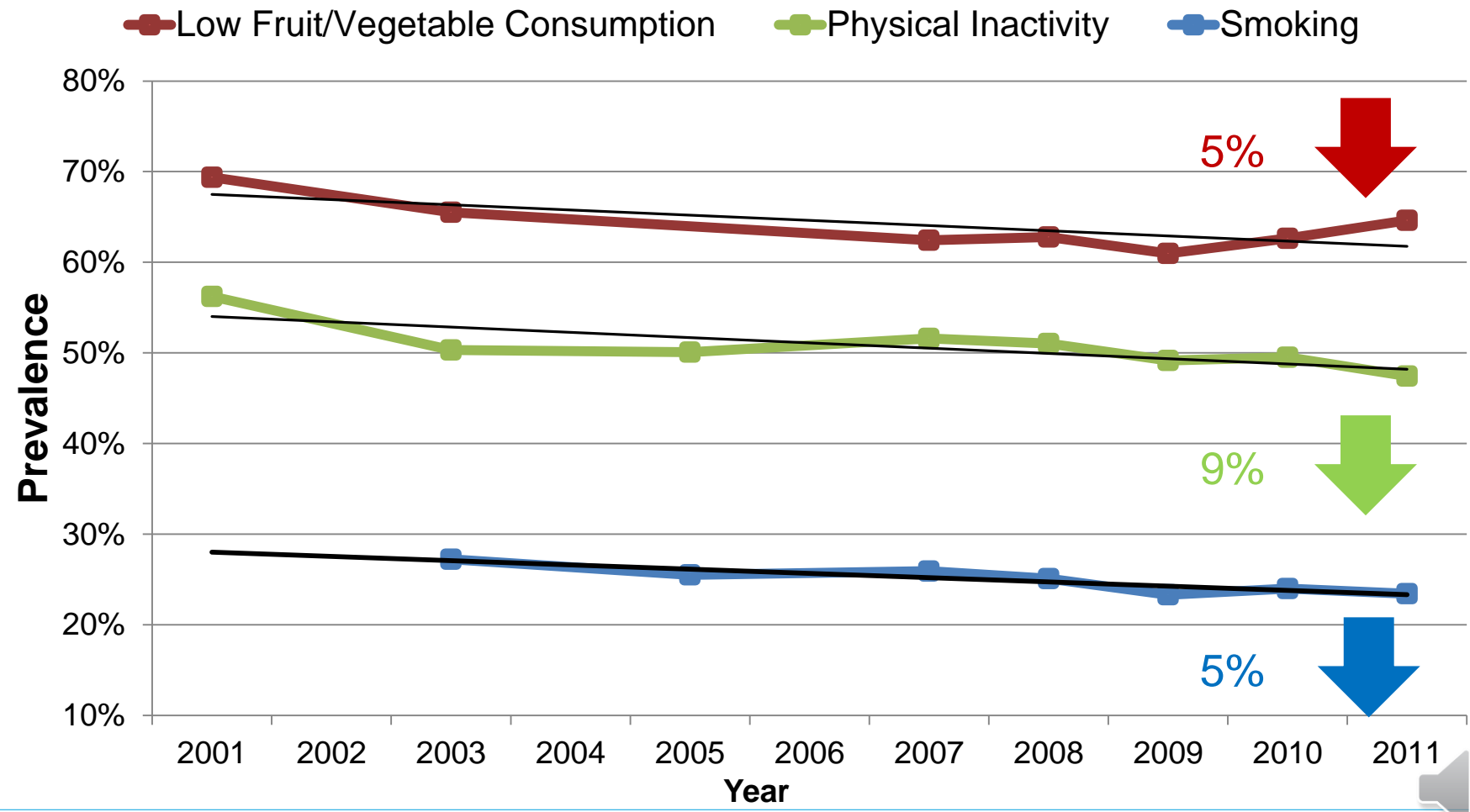
- Sum of 6 health factors / behaviours:
 - Non-smoker (or former smoker who quit >1 year ago)
 - Physically active (≥ 30 mins walking/day)
 - ≥ 5 fruits and vegetables/day
 - Body Mass Index < 25 kg/m²
 - Non-diabetic
 - Non-hypertensive

- Range: 0 – 6; Ideal = 6
- All health factors /behaviours weighted equally

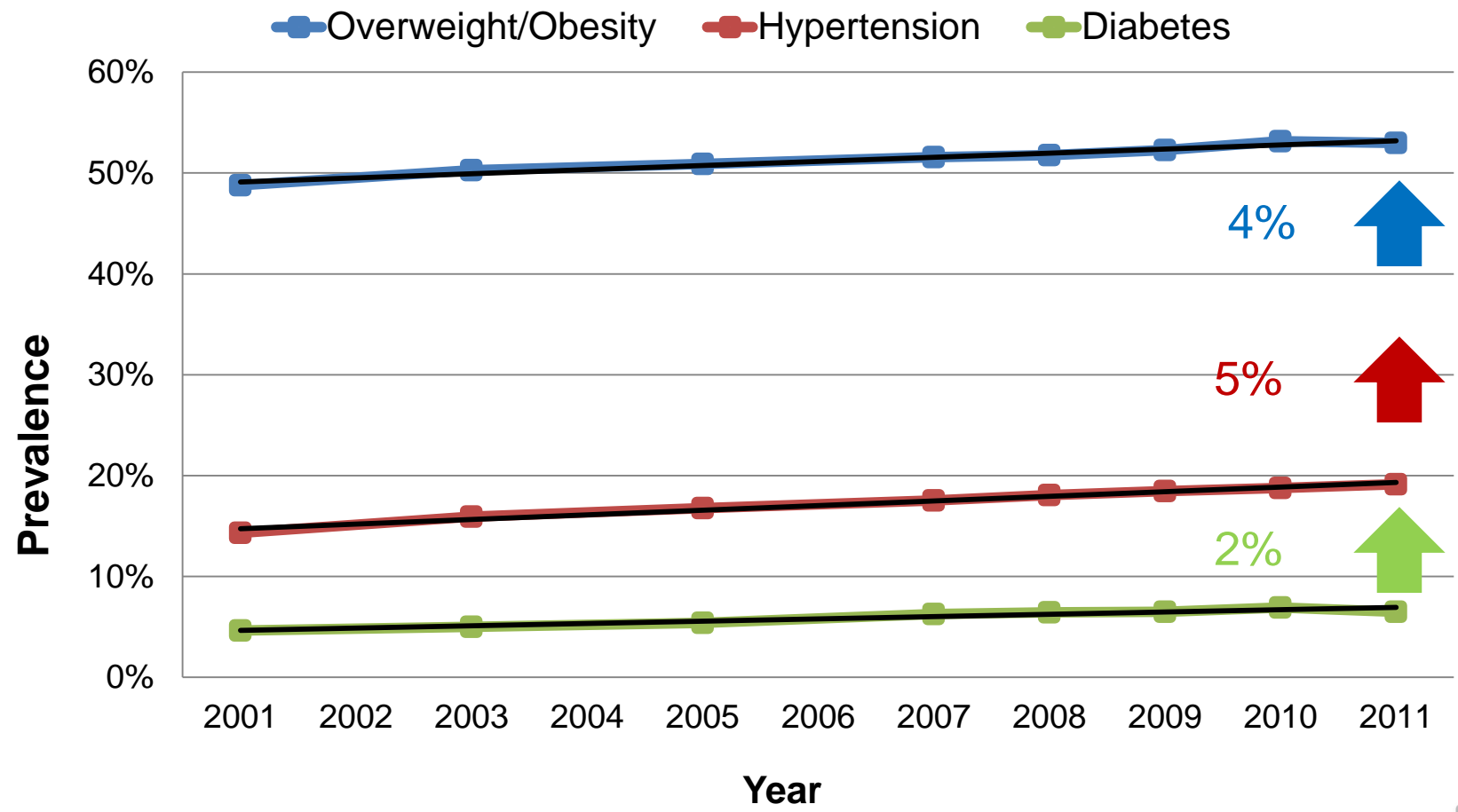
Youth CANHEART Health Index

- Sum of 4 health factors / behaviours:
 - Never tried smoking or never smoked a whole cigarette
 - Physically active (≥ 60 mins walking/day or ≥ 20 mins jogging or running/day)
 - ≥ 5 fruits and vegetables/day
 - Body Mass Index- age and sex specific cut-points, < 25 kg/m² for youth aged 18-19 years
- Range: 0 – 4; Ideal = 4
- All health factors /behaviours weighted equally

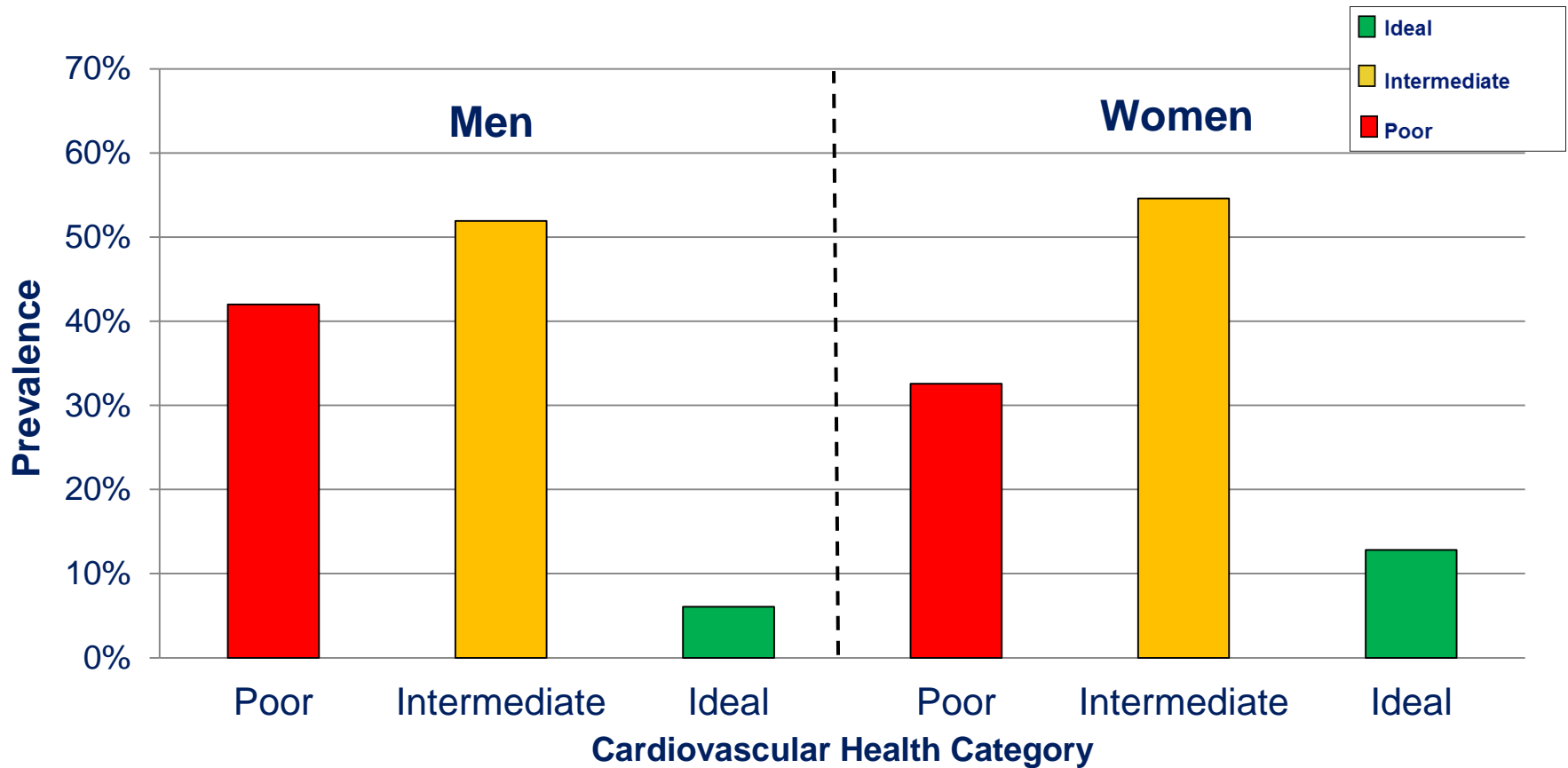
Trends in health behaviours and factors among Canadian adults



Trends in health behaviours and factors among Canadian adults



Prevalence of CANHEART health index categories

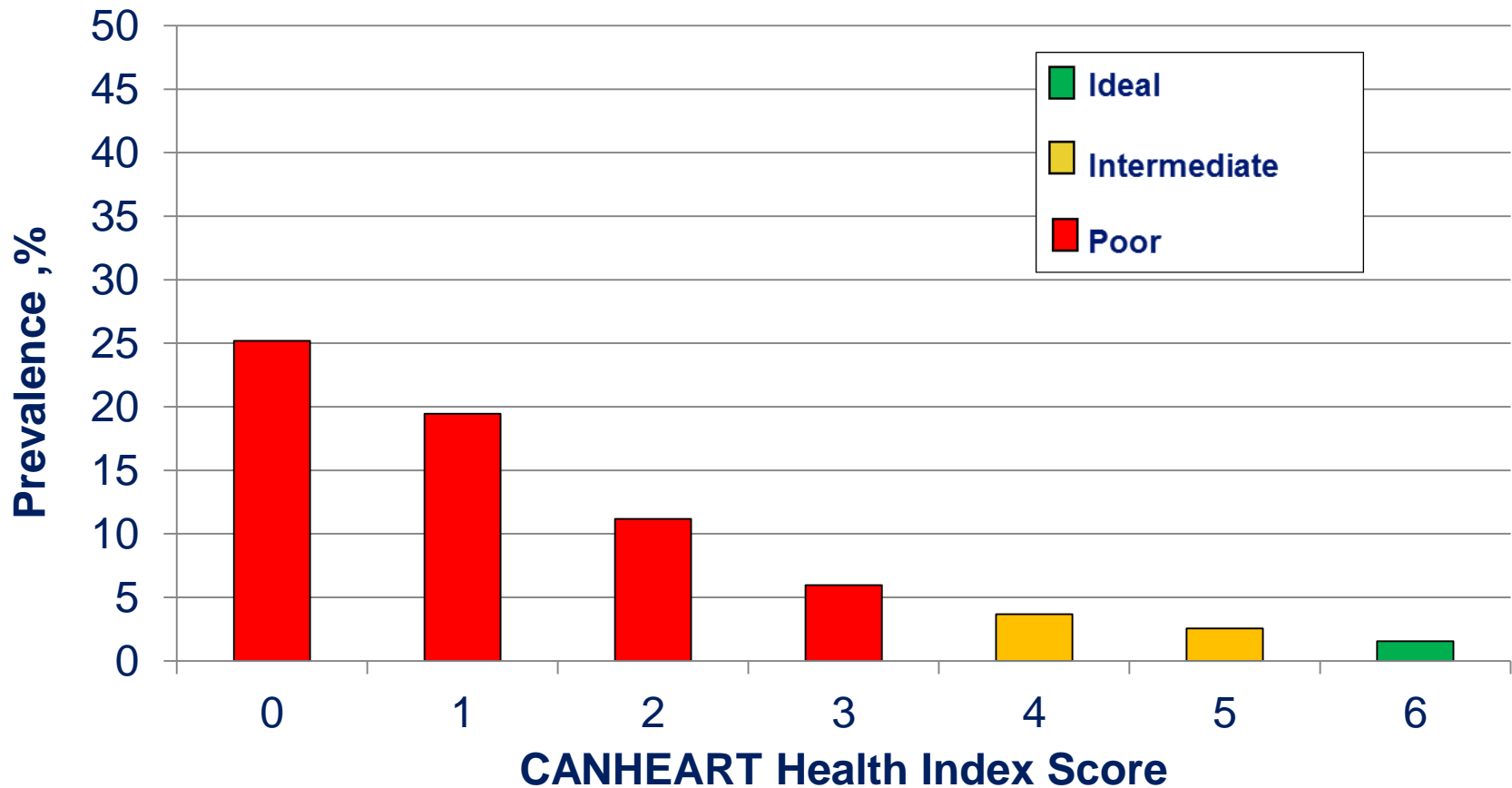


CV Health Categories # of health behaviours/factors

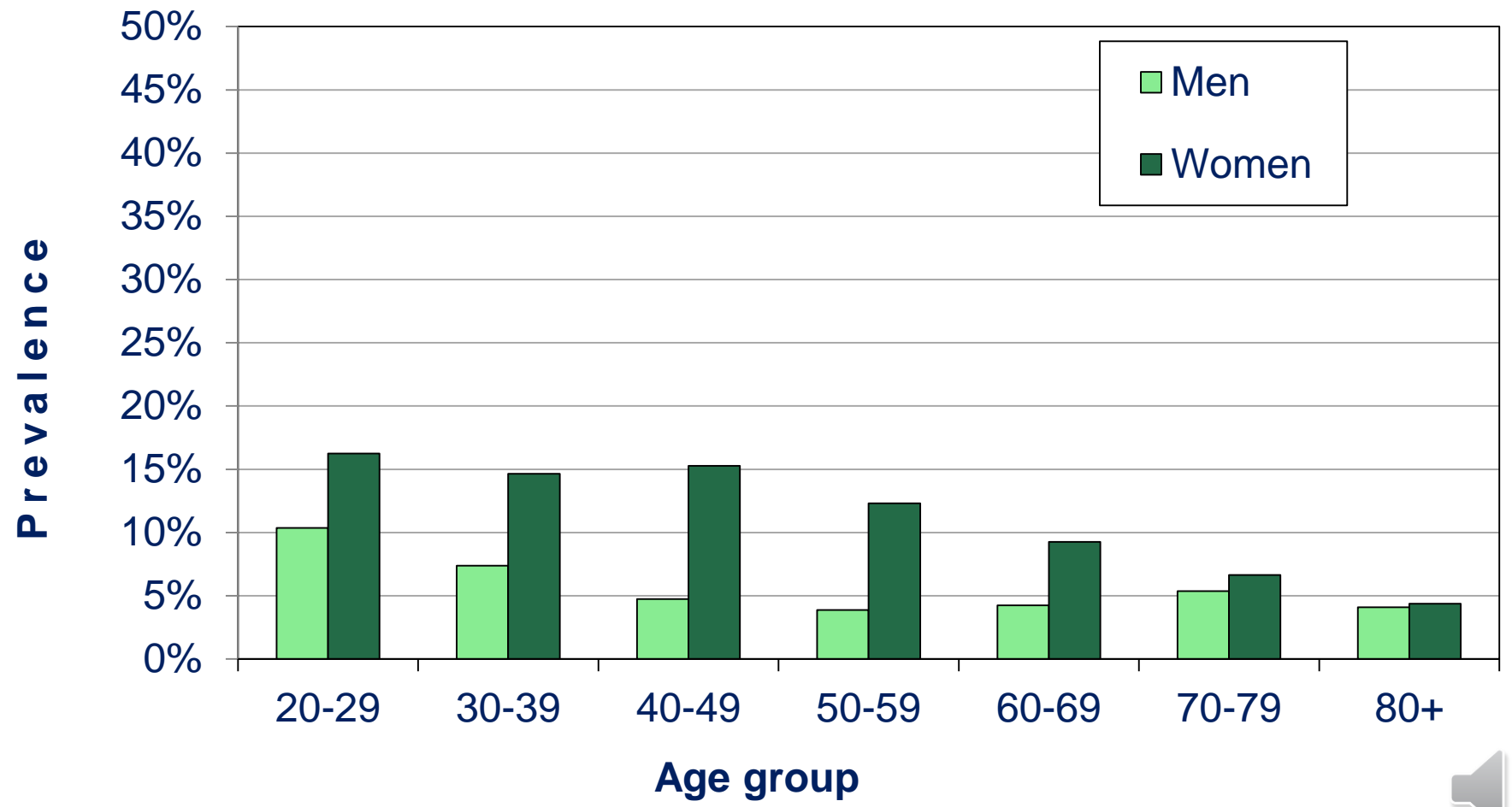
Poor = 0-3 Intermediate = 4-5 Ideal = 6



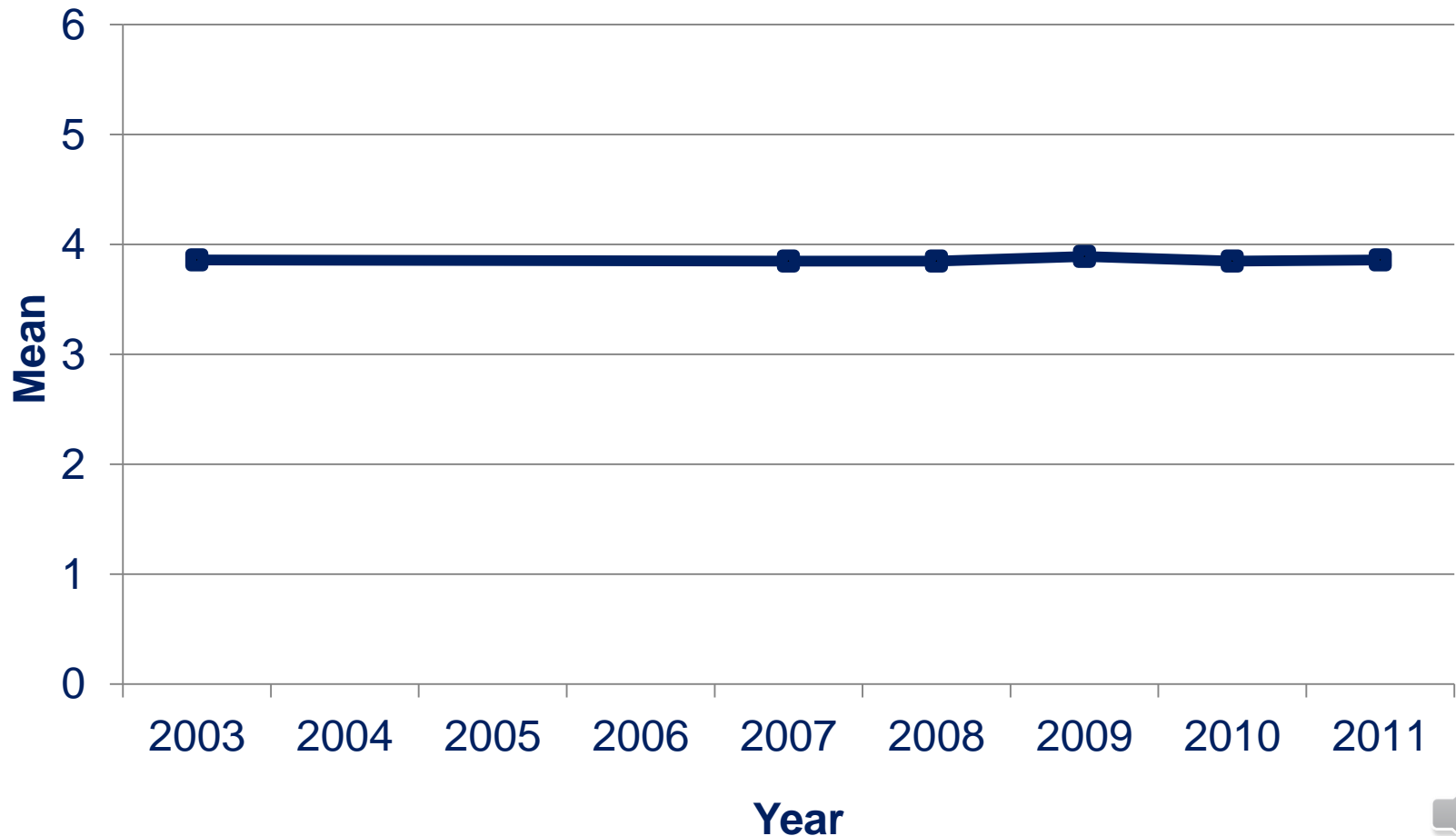
Prevalence of self-reported heart disease by CANHEART health index score



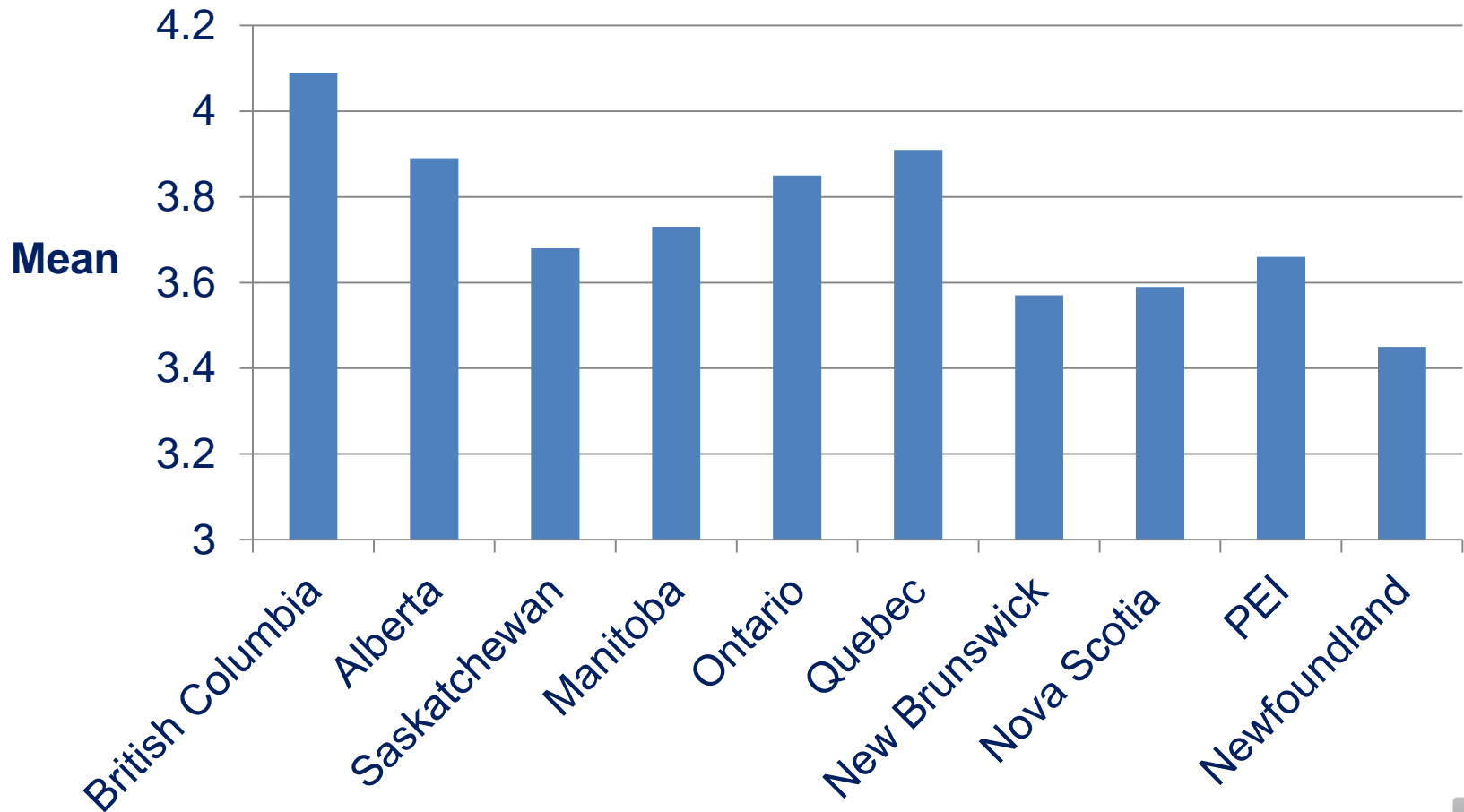
Prevalence of ideal cardiovascular health by age group



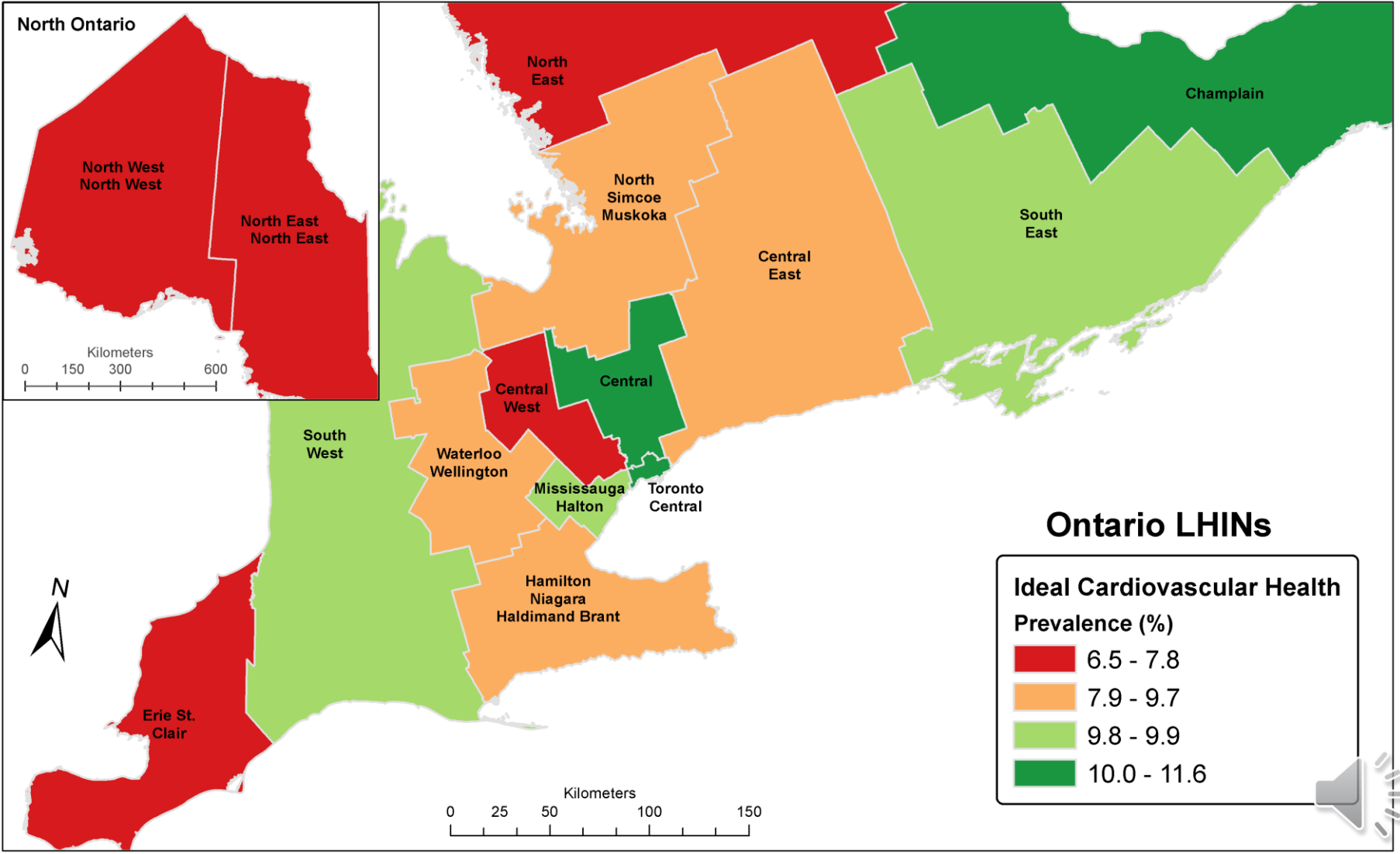
Trends in mean CANHEART health index score among Canadian adults



Mean CANHEART health index score among Canadian adults by province



Prevalence of Ideal Cardiovascular Health by LHIN



Summary

- Mixed trends in the prevalence of health behaviours and factors in the Canadian population during the study period
 - Some are improving-e.g., fruit/vegetable, physical activity, smoking
 - Others are worsening-e.g. overweight/obesity, hypertension, diabetes
- Overall, few Canadians are in ideal cardiovascular health (<1 in 10 adults)
 - Women are in better cardiovascular health than men
 - Cardiovascular health decreases with age
 - Mean CANHEART health index was stable during the study period
 - Strong interprovincial gradient found

Conclusions

- Room for improvement in the cardiovascular health of Canadians
- Although some positive trends in health behaviours were seen, worsening health factors are a cause for concern
- Collaborative intervention efforts are needed to improve the cardiovascular health of Canadians

Acknowledgements

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