

Global Burden of Disease Study trends for Canada from 1990 to 2016

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Disclosure Statement

I have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization

Outline



1. Provide an overview of the Global Burden of Disease Project
2. Describe Global Burden of Disease trends for Canada
3. Discuss the contribution of the Global Burden of Disease study from a national health surveillance perspective

Global Burden of Disease Study

- GBD Study initiated in early 1990s by the World Health Organization
 - Alan Lopez & Christopher Murray
- In mid-2000s the GBD project moved to the Institute of Health Metrics and Evaluation (IHME), University of Washington
- Now the GBD is primarily funded by the Bill & Melinda Gates Foundation
- The study is managed by a central scientific council
- It involves a network of >3000 collaborators worldwide
- Encourages scientific use of the GBD data by collaborators

300+ diseases and injuries

Captures all causes of death

195 countries

Data fully comparable between countries

1990 to 2016

Entire series re-estimated every year

Key Metrics



Disability-adjusted life years

The top level health loss metric
sum of YLDs and YLLs



Years of life lost

Sum of age at death - longest
observed life expectancy for a
person at that age



Years lived with disability

Based on prevalence,
disability weights for 235 health
states



Age-standardized

Data that are adjusted for
differences in age and population
size across locations or over time



Life expectancy

The number of years that a
person of a given age can expect
to live



Health-adjusted life expectancy

The number of years that a
person of a given age can expect
to live in full health

1,357

Data sources used to model estimates for Canada, 2016

8,824,827

All cause all-age DALYs in Canada, 2016

Global Burden of Disease Study Trends for Canada from 1990 to 2016

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1. To present current (2016) and historical (1990 and 2006) estimates for Canada of all-cause and cause-specific DALYs
2. To provide estimates of life expectancy and health-adjusted life expectancy for Canada in comparison with other countries

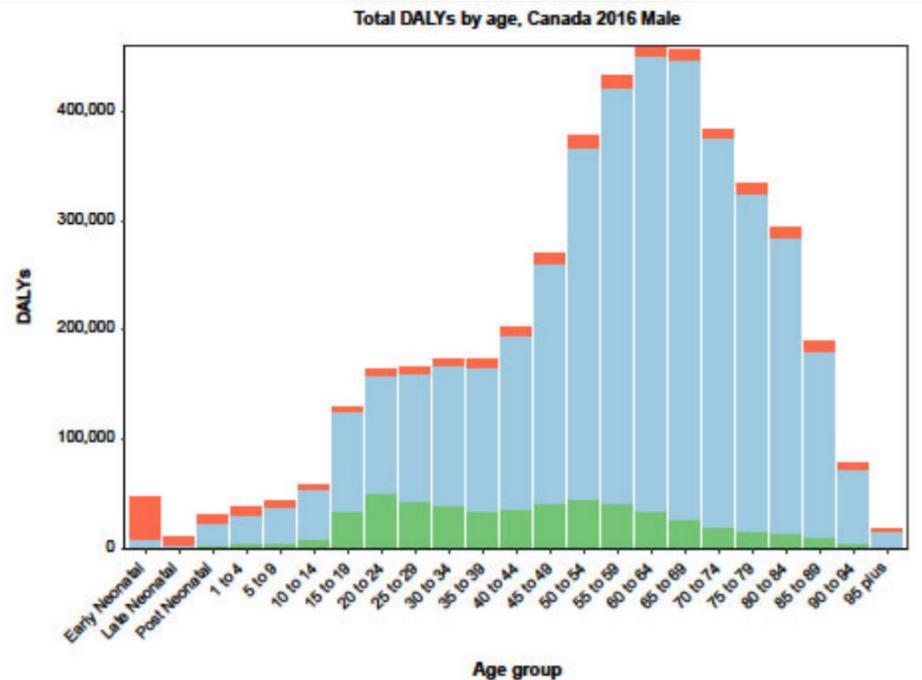
| Rank in number of DALYs 1990 | Rank in number of DALYs 2006 | Change in all-age DALYs (90-06), % | Change in age-standardized DALYs (90-06), % | Rank in number of DALYs 2016 | Change in all-age DALYs (06-16), % | Change in age-standardized DALYs (06-16), % |
|------------------------------|------------------------------|------------------------------------|---|------------------------------|------------------------------------|---|
| 1. Cardiovascular disease | 1. Neoplasms | 19.4 | -16.6 | 1. Neoplasms | 14.3 | -9.9 |
| 2. Neoplasms | 2. Cardiovascular diseases | -11.8 | -40.7 | 2. Cardiovascular diseases | 8.0 | -16.0 |
| 3. Mental and substance use | 3. Mental and substance use | 20.2 | 2.3 | 3. Musculoskeletal disorders | 21.2 | 3.1 |
| 4. Musculoskeletal disorders | 4. Musculoskeletal disorders | 27.3 | -3.2 | 4. Mental and substance use | 14.5 | 3.6 |
| 5. Other noncommunicable | 5. Other noncommunicable | 14.2 | -7.8 | 5. Other noncommunicable | 16.4 | -0.5 |
| 6. Neurologic disorders | 6. Neurologic disorders | 35.5 | 1.8 | 6. Neurologic disorders | 15.0 | -3.9 |
| 7. Diabetes/urog/blood/endo | 7. Diabetes/urog/blood/endo | 47.4 | 5.9 | 7. Diabetes/urog/blood/endo | 15.6 | -6.8 |
| 8. Unintentional injuries | 8. Unintentional injuries | 11.5 | -15.8 | 8. Unintentional injuries | 18.6 | -2.0 |
| 9. Transport injuries | 9. Chronic respiratory | 26.8 | -5.6 | 9. Chronic respiratory | 10.3 | -9.8 |
| 10. Chronic respiratory | 10. Self-harm and violence | -0.9 | -15.1 | 10. Self-harm and violence | 4.4 | -4.8 |
| 11. Self-harm and violence | 11. Transport injuries | -23.5 | -35.4 | 11. Transport injuries | -5.7 | -16.8 |
| 12. Neonatal disorders | 12. Diarrhea/LRI/other | 11.9 | -15.2 | 12. Diarrhea/LRI/other | 15.5 | -5.2 |
| 13. Diarrhea/LRI/other | 13. Neonatal disorders | -14.2 | -9.3 | 13. Neonatal disorders | 11.7 | -2.3 |
| 14. Digestive diseases | 14. Cirrhosis | 27.2 | -11.8 | 14. Cirrhosis | 14.4 | -7.2 |
| 15. Cirrhosis | 15. Digestive diseases | 17.4 | -17.1 | 15. Digestive diseases | 16.4 | -6.5 |

Figure caption: Rank of DALYs and percent change for diseases and injuries in 1990, 2006, and 2016 for both sexes combined, showing percent change of counts and age-standardized rates per 100,000.

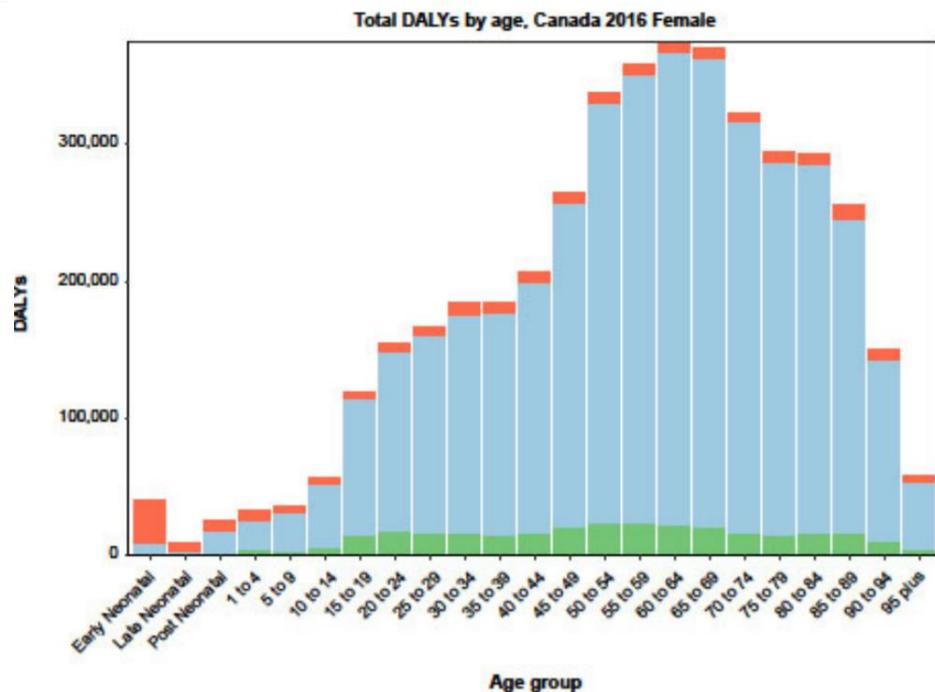
■ Communicable, maternal, neonatal and nutritional diseases
 ■ Noncommunicable diseases
 ■ Injuries

Figure caption. Age-specific DALY counts for female (A) and males (B) showing relative contribution of diseases and injuries in 2016

A)



B)

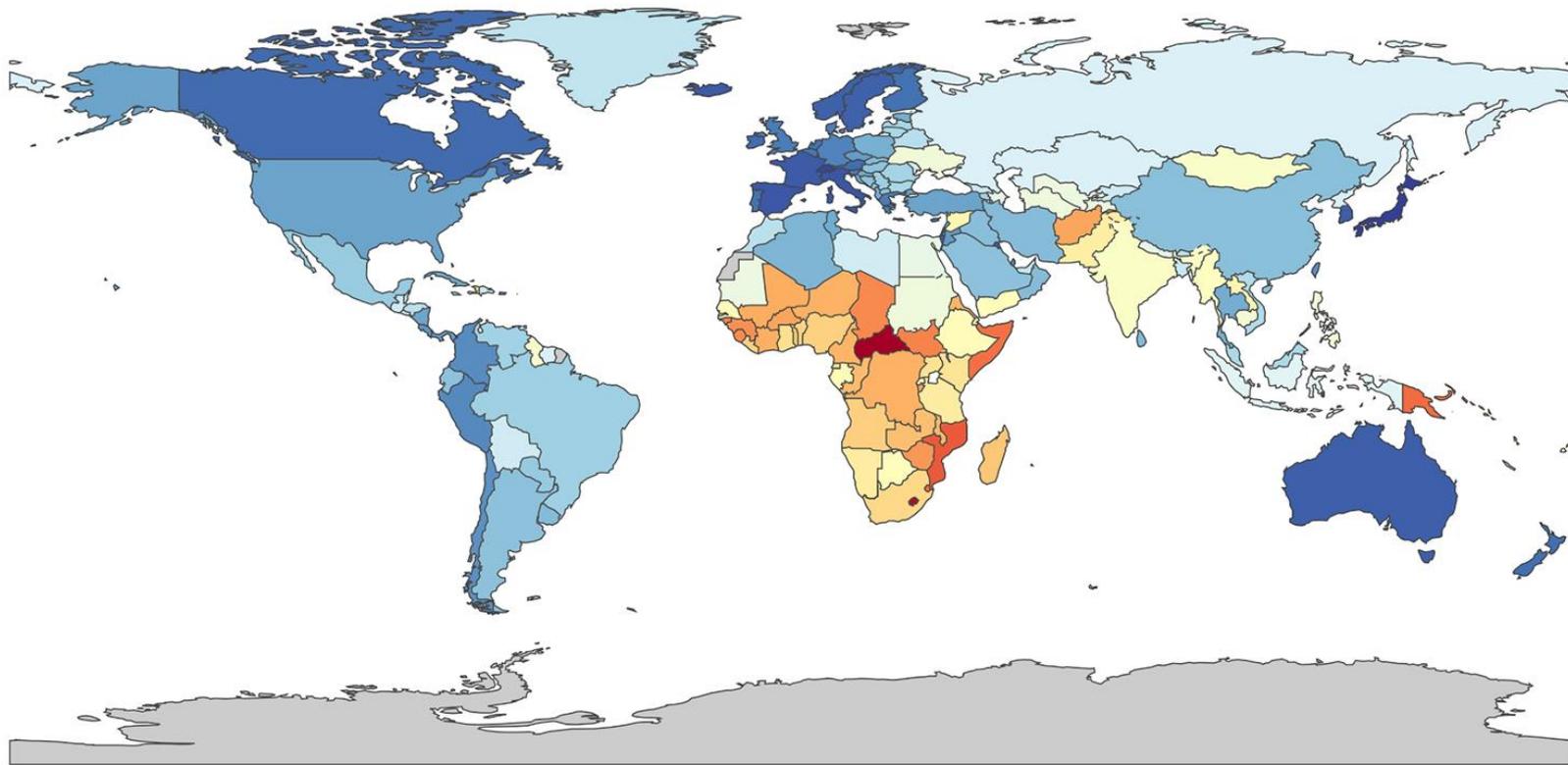


Communicable, maternal, neonatal, and nutritional diseases

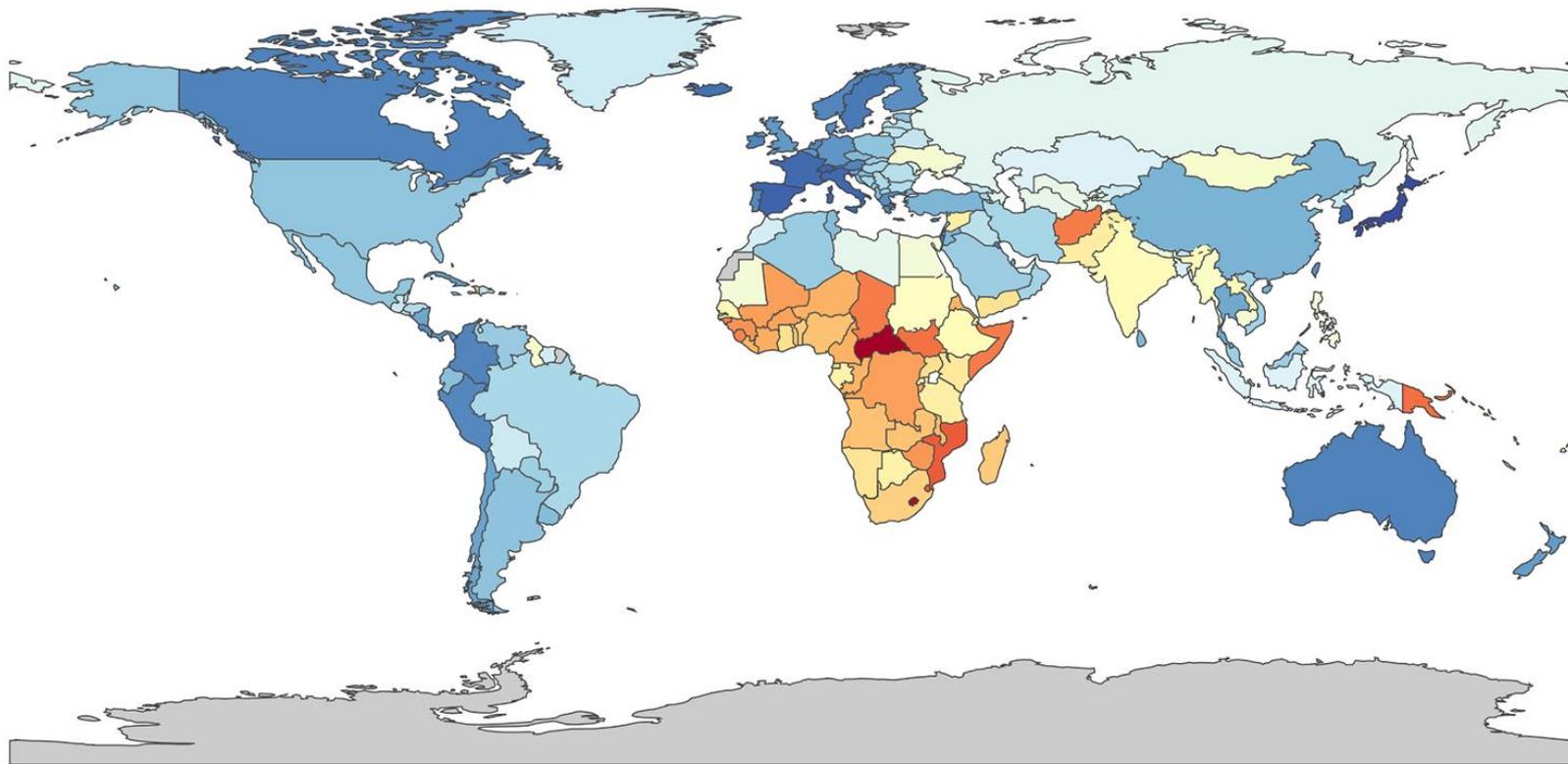
Non communicable diseases

Injuries

Both sexes, <1 year, 2016, Life expectancy



Both sexes, <1 year, 2016, Healthy life expectancy



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Display Cause Risk

Measure Deaths YLDs DALYs

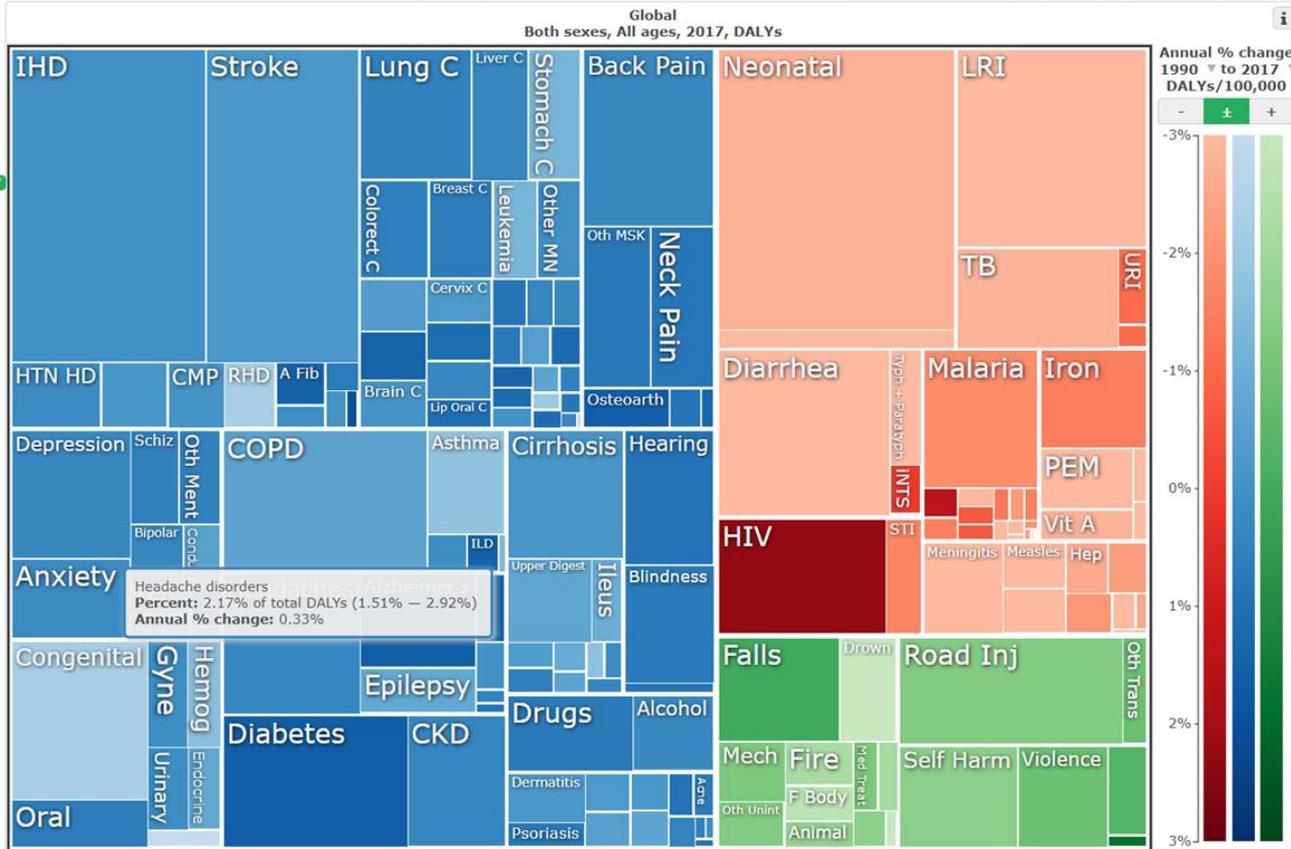
Location

Year

Age All <5 5-14
 15-49 50-69 70+

Sex Male Female Both

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Benefits of the Global Burden of Disease Study

- Modelled estimates are comparable between causes, over time, and across geographic locations
 - Incorporates Uncertainty Intervals
 - Modelling approach for each cause is improved/modified with collaborator feedback when evidence changes or new approaches emerge
 - Incorporates both measures of disability (YLD) and life lost (YLL)
 - Provides just-in-time evidence
- Can complement current national health surveillance efforts

Thank you!



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