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# Age and cause contributions of lower life expectancy in Inuit Nunangat, 1989-2003

**National Aboriginal Health Organisation**

**November 24<sup>th</sup>, 2009**

**Ottawa, ON**

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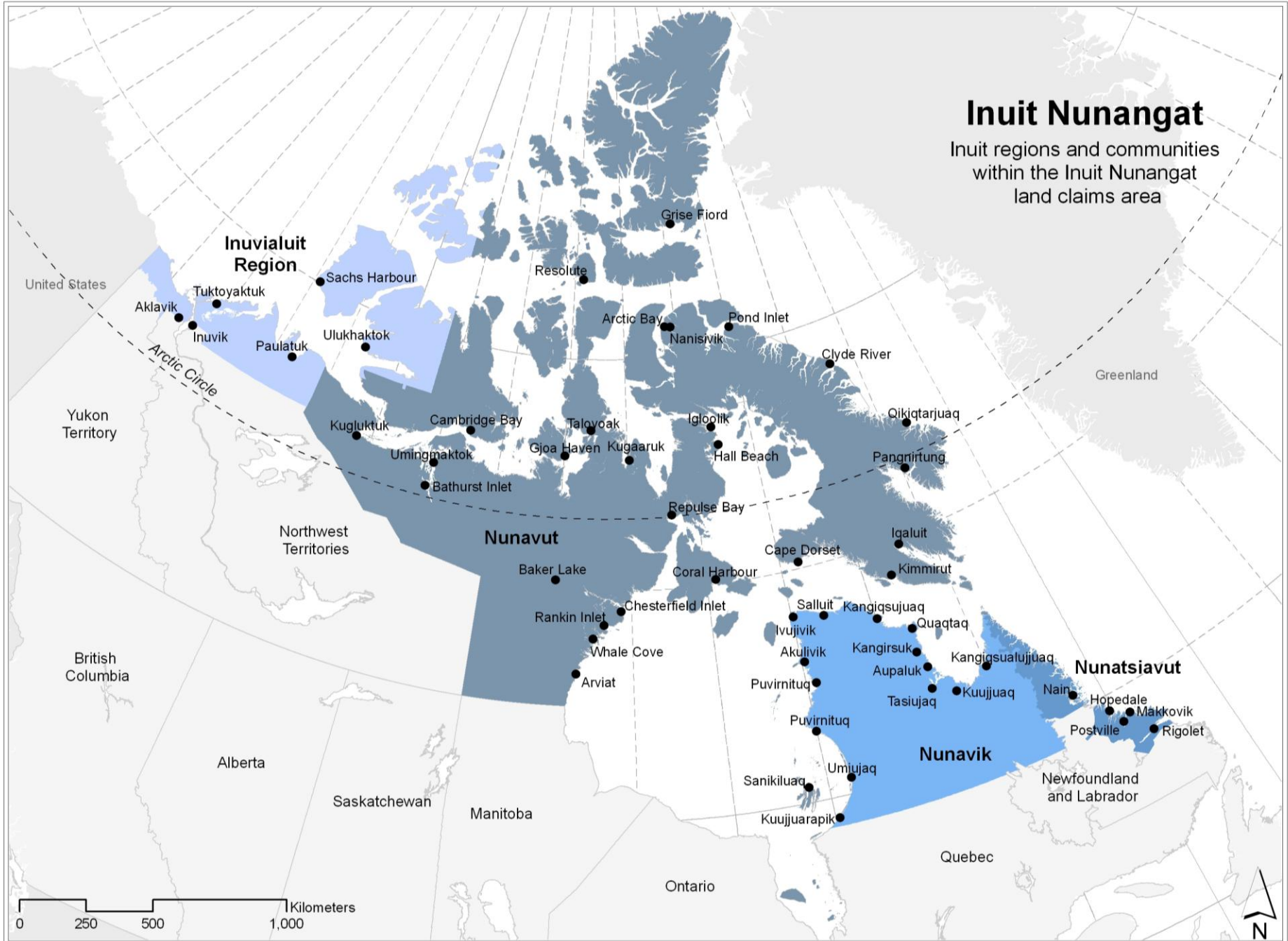
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# Outline

- Objective
  - To measure the contributions of age groups and causes of death to differences life expectancy between residents of Inuit Nunangat and the rest of Canada
- Rationale
  - Life expectancy for residents of Inuit Nunangat is lower than for residents in the rest of Canada
    - Specific causes of death in certain age groups are thought to contribute to this difference



# Inuit Nunangat

Inuit regions and communities within the Inuit Nunangat land claims area

## Inuvialuit Region

## Nunavut

## Nunatsiavut

## Nunavik

# Data sources

- Deaths:
  - Canadian Mortality Database
  - Three 5-year periods:
    - Centred on census years 1991, 1996, 2001 (1989-2003)
  - Census subdivision code for usual place of residence
- Population (person-years)
  - Multiplied by factor of five for each mid-period census
  - Mid-year population counts from census

# Methods

## - Analytic techniques

- Life expectancy
  - Standard abridged life tables (Chiang adjusted)
- Cause decomposition
  - What cause-specific mortality differences contribute to total differences in life expectancy?
    - Contribution of specific causes of death to the total years of difference between life expectancies
  - Arriaga (1989) method from discrete life tables

# Methods

## - Causes of death

- Global Burden of Disease
  - Causes of death aggregated in a way that underpins human development rather than the body system
    - I – Communicable, maternal, perinatal, and nutritional
    - II – Noncommunicable diseases
    - III – Injuries
- Attributable Causes of Death
  - Mackenbach et al. 2008 *NEJM*.
    - Smoking-related
    - Alcohol-related
    - Medically amenable deaths (appendicitis, diabetes, etc...)



# Results

## - Life expectancy



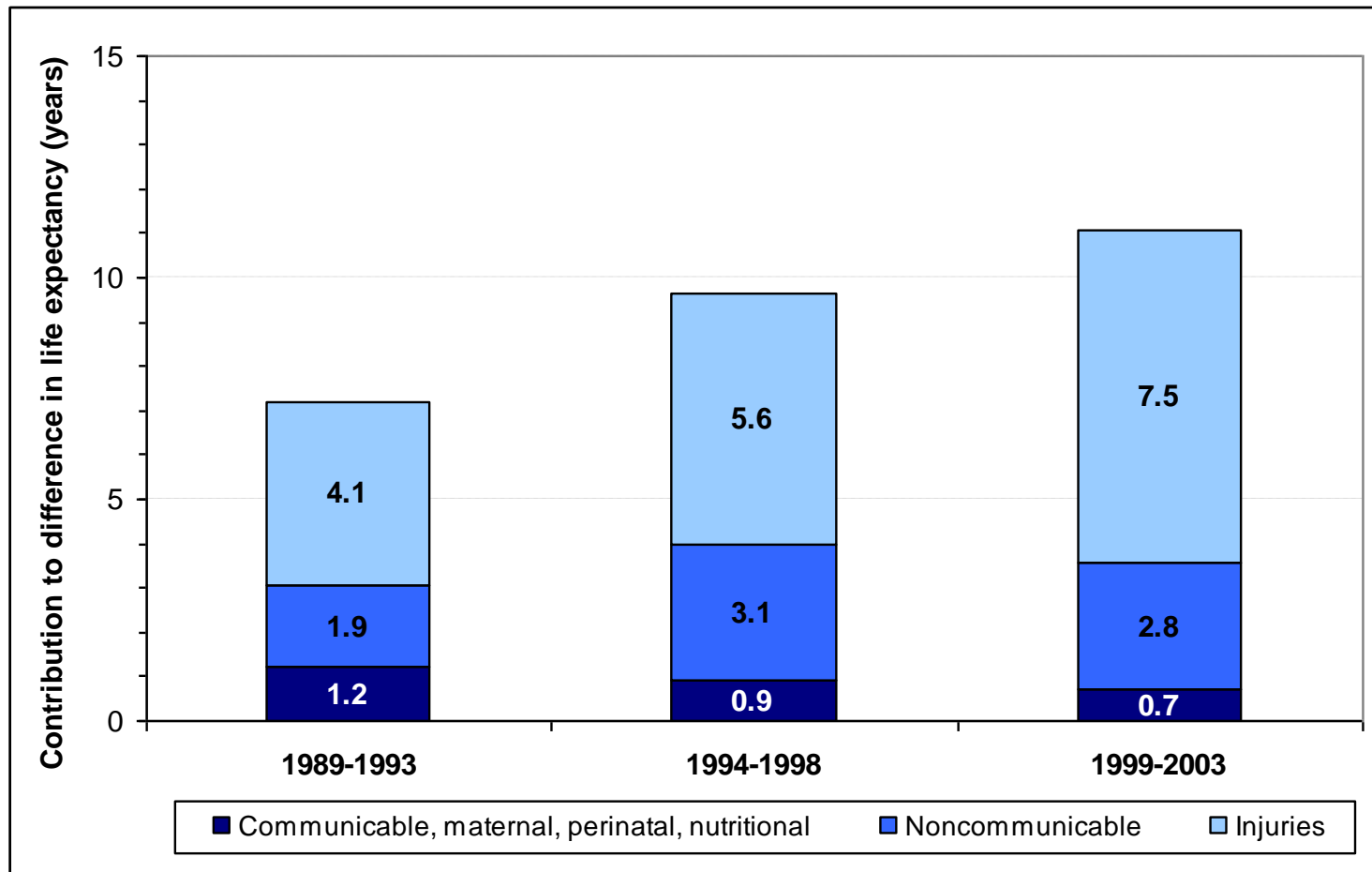
	Inuit Nunangat		Canada		Difference
	Years (A)	95% confidence interval	Years (B)	95% confidence interval	A-B
<b>1989-1993</b>					
Males	66.5	(65.1 to 67.9)	74.2	(74.2 to 74.2)	-7.7
Females	71.5	(70.0 to 73.1)	80.6	(80.6 to 80.7)	-9.1
<b>1994-1998</b>					
Males	64.7	(63.3 to 65.7)	74.6	(74.6 to 74.6)	-10.1
Females	70.7	(69.4 to 72.1)	79.8	(79.7 to 79.8)	-9.0
<b>1999-2003</b>					
Males	64.7	(63.4 to 65.9)	76.6	(76.5 to 76.6)	-11.9
Females	69.9	(68.7 to 71.1)	81.8	(81.8 to 81.9)	-11.9

Sources: Statistics Canada, Vital Statistics - Deaths Database;

Statistics Canada, Census of Population

# Results

## - Cause contributions (male)





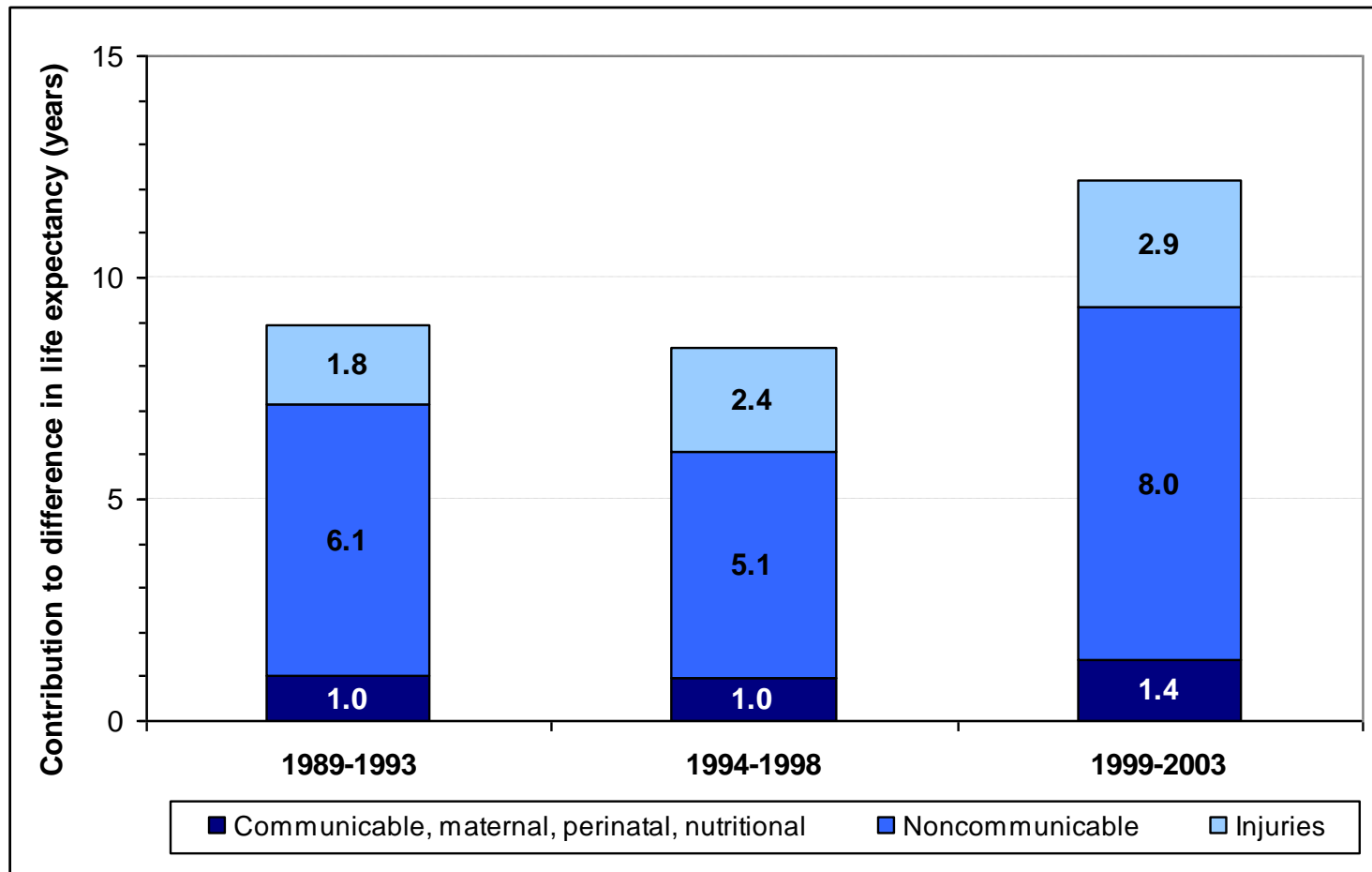
# Results

## - Cause contributions (years, male)

Cause of death	1989-1993	1994-1998	1999-2003
<b>Total difference</b>	<b>7.7</b>	<b>10.1</b>	<b>11.9</b>
<b>I. Communicable, maternal, perinatal, and nutritional</b>	<b>1.2</b>	<b>0.9</b>	<b>0.7</b>
Respiratory infections	0.6	0.4	0.2
Perinatal conditions	0.3	0.4	0.2
Other communicable, maternal, and nutritional	0.3	0.2	0.4
<b>II. Noncommunicable diseases</b>	<b>1.9</b>	<b>3.1</b>	<b>2.8</b>
Malignant neoplasms	1.2	1.2	1.4
Colon and rectum cancers	0.0	0.1	0.2
Trachea, bronchus, and lung	1.1	0.6	1.0
Other malignant neoplasms	0.6	0.8	0.4
Neuro-psychiatric conditions	0.3	0.3	0.2
Cardiovascular diseases	0.1	0.9	0.5
Ischaemic heart disease	-0.7	0.3	-0.1
Cerebrovascular disease	0.2	0.4	0.2
Other cardiovascular diseases	0.9	0.7	0.6
Respiratory diseases	0.5	0.7	0.7
COPD	0.5	0.5	0.5
Other respiratory diseases	0.1	0.2	0.2
Congenital abnormalities	0.2	0.2	0.2
Other noncommunicable diseases	0.1	0.1	0.2
<b>III. Injuries</b>	<b>4.1</b>	<b>5.6</b>	<b>7.5</b>
Unintentional injuries	1.6	2.6	2.3
Intentional injuries	2.4	3.0	5.3
Self-inflicted injuries	2.1	2.9	5.0
Other intentional injuries	0.4	0.2	0.3

# Results

## - Cause contributions (female)



# Results

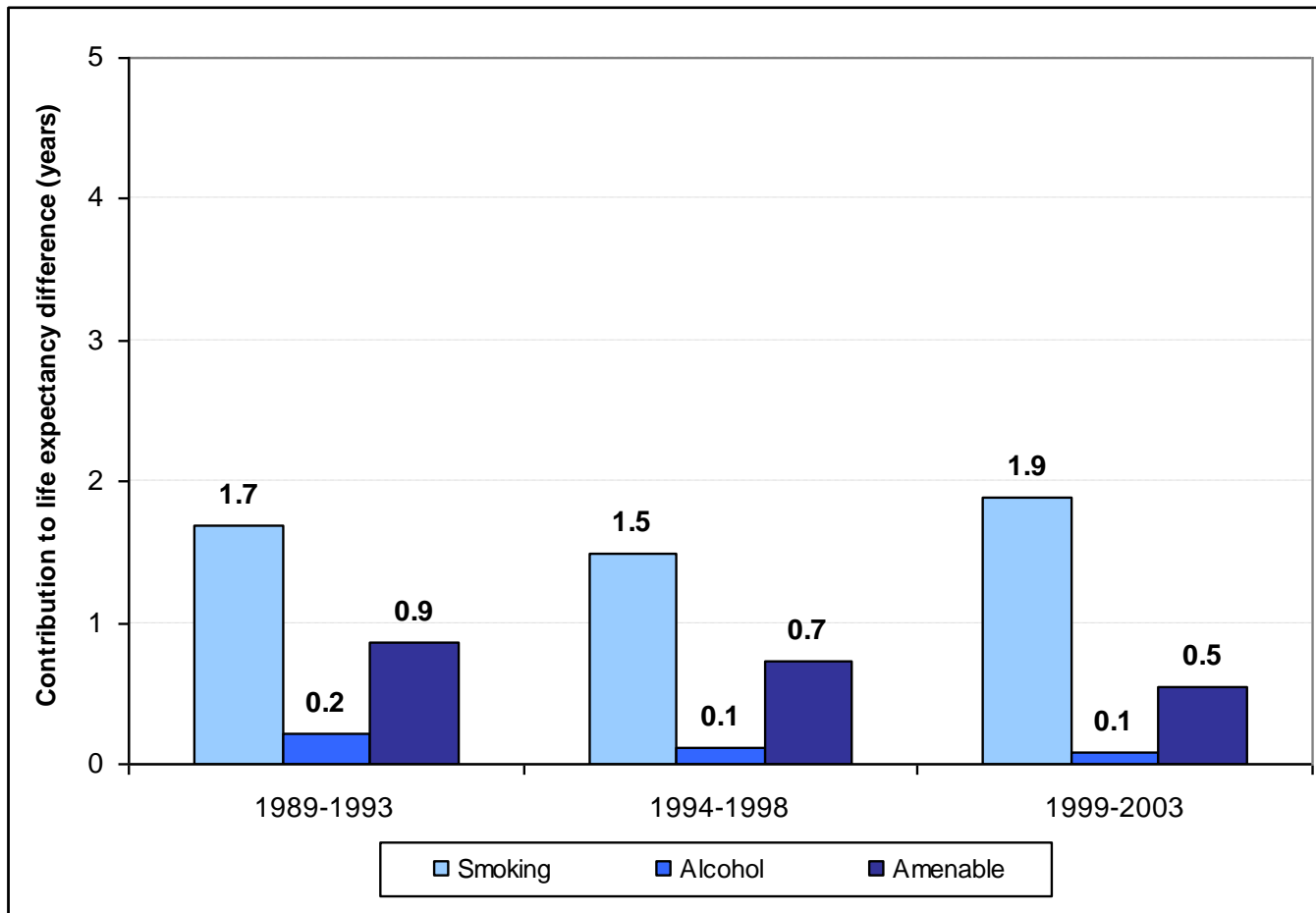
## - Cause contributions (years, female)

Cause of death	1989-1993	1994-1998	1999-2003
<b>Total difference</b>	<b>9.1</b>	<b>9.0</b>	<b>11.9</b>
<b>I. Communicable, maternal, perinatal, and nutritional</b>	<b>1.0</b>	<b>1.0</b>	<b>1.4</b>
Respiratory infections	0.3	0.4	0.5
Perinatal conditions	0.3	0.2	0.3
Other communicable, maternal, and nutritional	0.4	0.5	0.6
<b>II. Noncommunicable diseases</b>	<b>6.1</b>	<b>5.1</b>	<b>8.0</b>
Malignant neoplasms	1.4	2.0	3.6
Colon and rectum cancers	0.2	0.2	0.6
Trachea, bronchus, and lung	1.1	1.7	2.1
Other malignant neoplasms	1.1	1.0	1.4
Neuro-psychiatric conditions	0.3	0.3	0.3
Cardiovascular diseases	1.5	0.5	1.3
Ischaemic heart disease	-0.1	-0.2	0.1
Cerebrovascular disease	0.6	0.1	0.7
Other cardiovascular diseases	1.4	1.0	0.5
Respiratory diseases	2.9	1.9	2.1
COPD	2.4	1.6	1.8
Other respiratory diseases	0.5	0.4	0.3
Congenital abnormalities	0.3	0.1	0.3
Other noncommunicable diseases	0.5	0.8	0.6
<b>III. Injuries</b>	<b>1.8</b>	<b>2.4</b>	<b>2.9</b>
Unintentional injuries	0.9	1.3	1.5
Intentional injuries	0.7	1.1	1.4
Self-inflicted injuries	0.5	0.9	1.3
Other intentional injuries	0.3	0.2	0.1

# Results

## - Attributable cause contributions

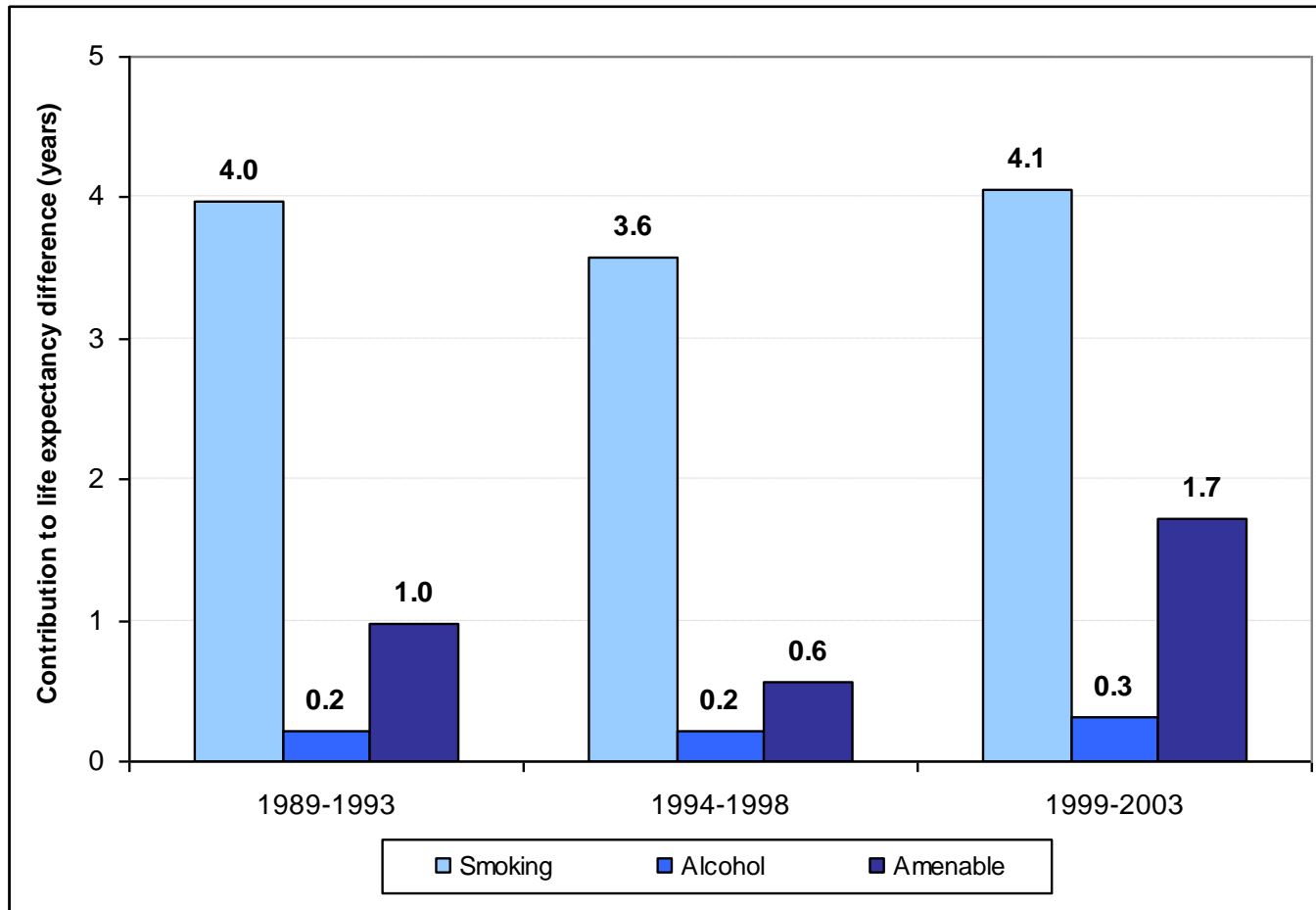
Males



# Results

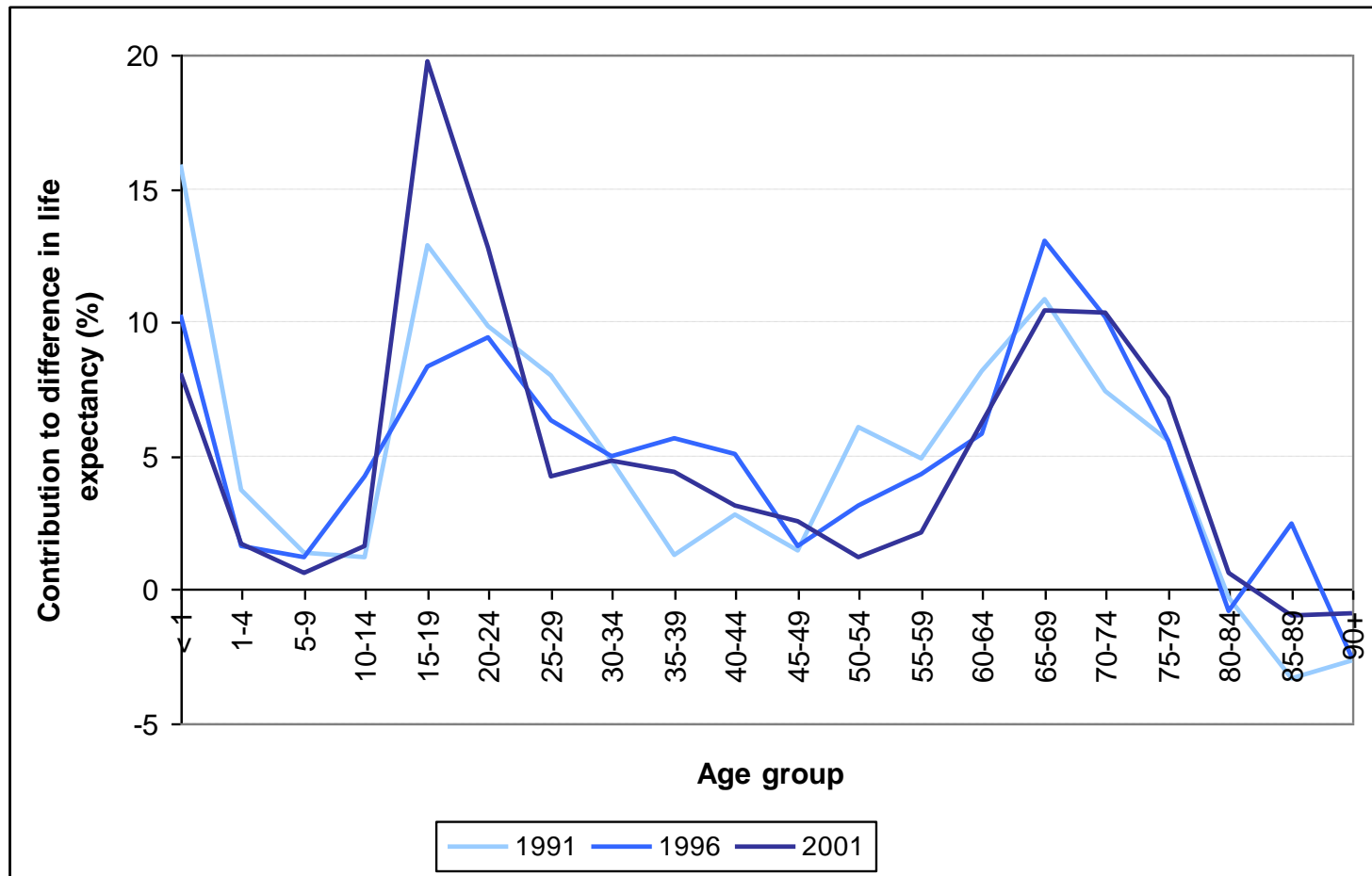
## - Attributable cause contributions

### Females



# Results

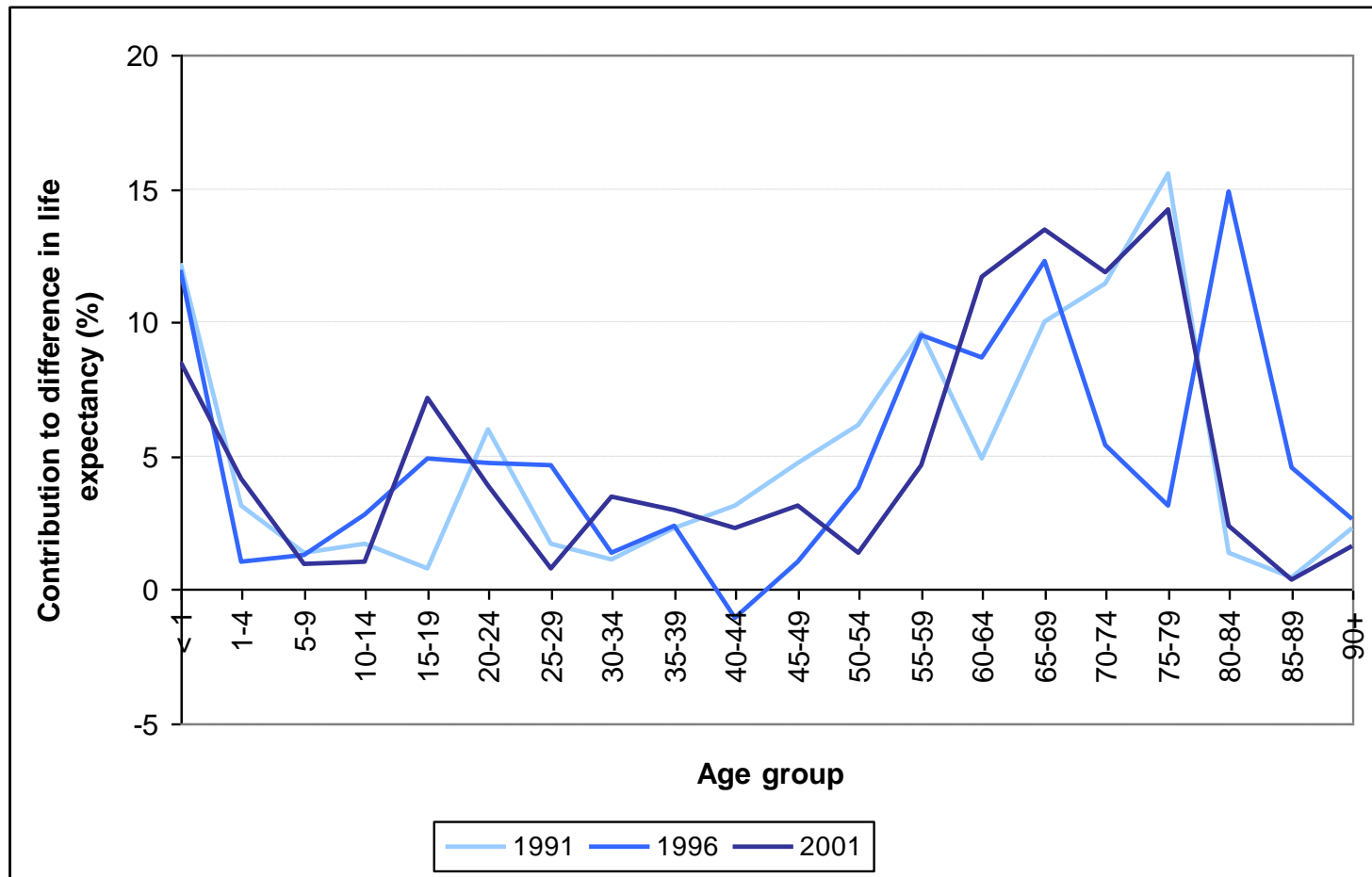
## - Age contributions (males, percent)





# Results

## - Age contributions (females, percent)



# Discussion

- Life expectancy difference appears to be increasing between Inuit Nunangat & Canada
- Difference is related to specific causes of death
  - Males – injury & suicide are major contributors
    - Injury and suicide account for 7.5 years of difference
  - Females – chronic diseases are major contributors
    - Lung cancer and COPD account for 4 years of difference
- Specific causes differ between sexes
  - Smoking-related diseases for females
  - Alcohol-related diseases are not major contributors

# Discussion

- Difference is concentrated in specific age groups
  - Males – mortality between 15 and 29 is key
    - 1/3 of difference due to mortality between 15 and 29 years
    - This is largely due to injury and suicide
  - Females – mortality after age 60 contributes most
    - 50% of difference due to mortality after 60 years of age
    - This is largely due to chronic diseases

# Limitations

- Limits to geographic approach
  - For all residents of Inuit Nunangat, not just Inuit
  - Unequal access to health services
  - Older population may move “south” for care
- Reliability of vital statistics
  - Cause of death coding may vary between periods
- Use of a comparable population
  - Comparison to other isolated communities, other Aboriginal groups, or other countries

# Acknowledgements

- Contact:
  - Paul A. Peters, PhD  
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- Thanks to: Health Canada FNIHB  
(Jennifer Pennock, Neil Goedhuis)