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Avoidable mortality among First Nations adults in Canada: A cohort analysis

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OUTLINE

- **CONTEXT – Avoidable mortality**
- **METHODS AND DATA**
- **FINDINGS**
- **CONCLUSIONS**



BACKGROUND – Avoidable mortality

- Deaths that could have been potentially avoided through prevention practices, public health policies, and the provision of timely and effective health care (CIHI, 2012)
- Account for 70% of all deaths under the age 75.
- Help understand how the benefits of health care have been distributed throughout the population (Li et al., 2009).
- Lack of detailed information on avoidable mortality among First Nations people.



RESEARCH OBJECTIVES

- This study investigates:
 - whether First Nations adults have a higher than expected rate of avoidable mortality compared with non-Aboriginal people;
 - where these inequalities are more prevalent by specific cause of death;
 - how socio-demographic factors are related to avoidable mortality.



DATA SOURCE: 1991 CANADIAN CENSUS COHORT

- Eligibility
 - Enumerated on 1991 census long form
 - Aged 25 or older as of June 4, 1991
 - Not a usual resident of an institution
 - N=3,576,487
- Sample
 - Aged 25-74 at baseline
 - N=2,584,418 (First Nations N=61,220)



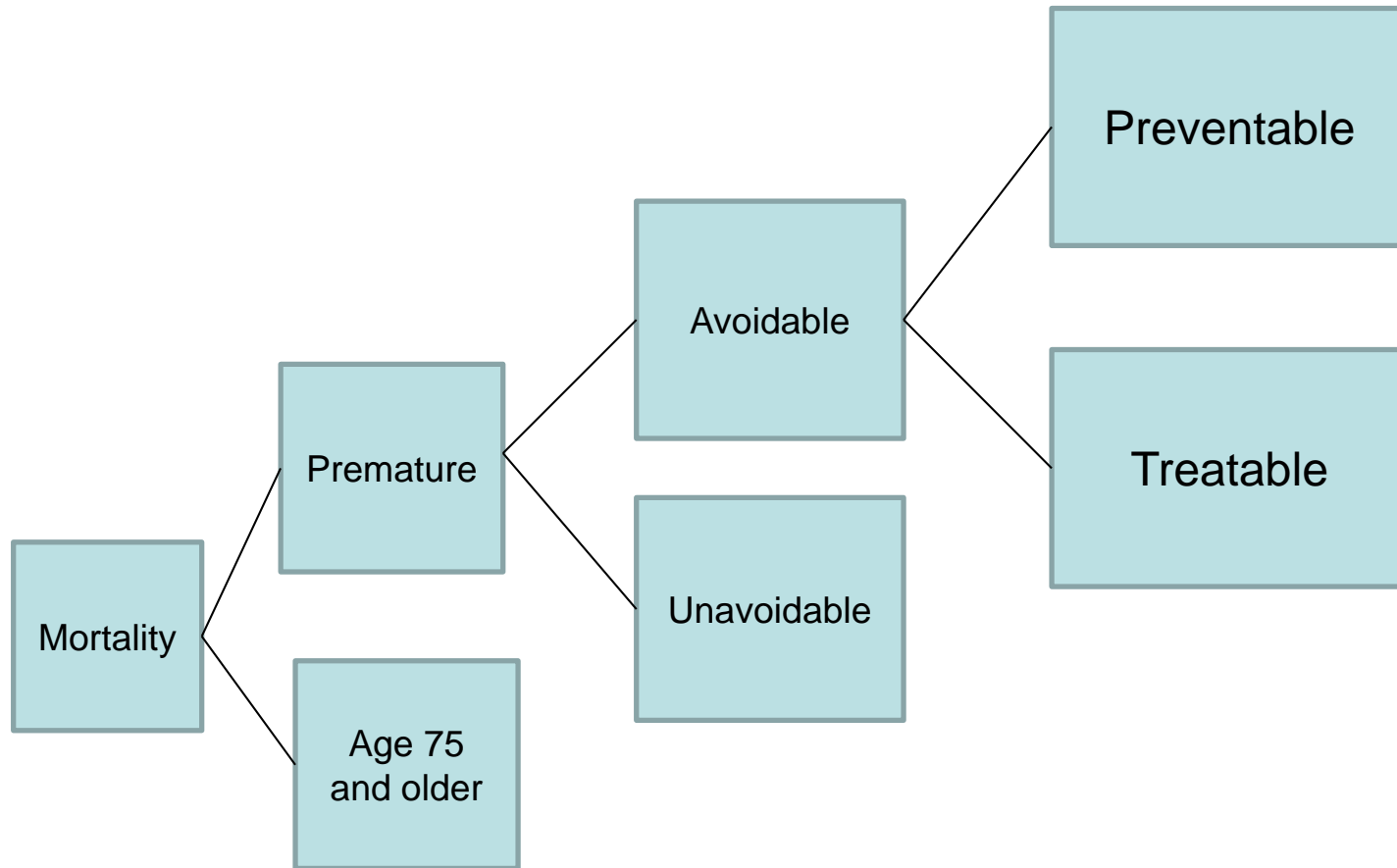
1991 CANADIAN CENSUS COHORT - CONTENT

- 1991 Census
 - Demography, labour market, income, education, language, disabilities, housing, immigration, ethno-cultural, Aboriginal ancestry, Registered Indian
 - This study defined First Nations people by ancestry, Registration under the *Indian Act*, or membership in an Indian band or First Nation.

- Mortality – Vital statistics
 - Underlying cause of death, date of death, age at death



Premature, avoidable, preventable, treatable deaths





STATISTICAL ANALYSES

- Person-days of risk from the beginning of the study (4 June 1991) to the date reaching age 75, the date of death before age 75, the date of emigration before age 75, or to the end of study (31 December 2006).
- Age-standardized mortality rates (ASMRs) for each category, by sex and for subgroups of the population, based on the total Aboriginal cohort population structure .
- Rate ratios (RRs) comparing the ASMRs for First Nations to those of non-Aboriginal cohort members.
- Cox proportional hazard ratios.



Selected characteristics of study sample, men and women, aged 25 -74 at baseline, Canada, 1991

	First Nations		Non-Aboriginal	
	Male	Female	Male	Female
<i>Age group (%)</i>				
25-34	42	45	28	31
35-44	28	28	27	28
45-54	16	15	19	18
55-64	9	8	15	13
65-74	5	4	11	11

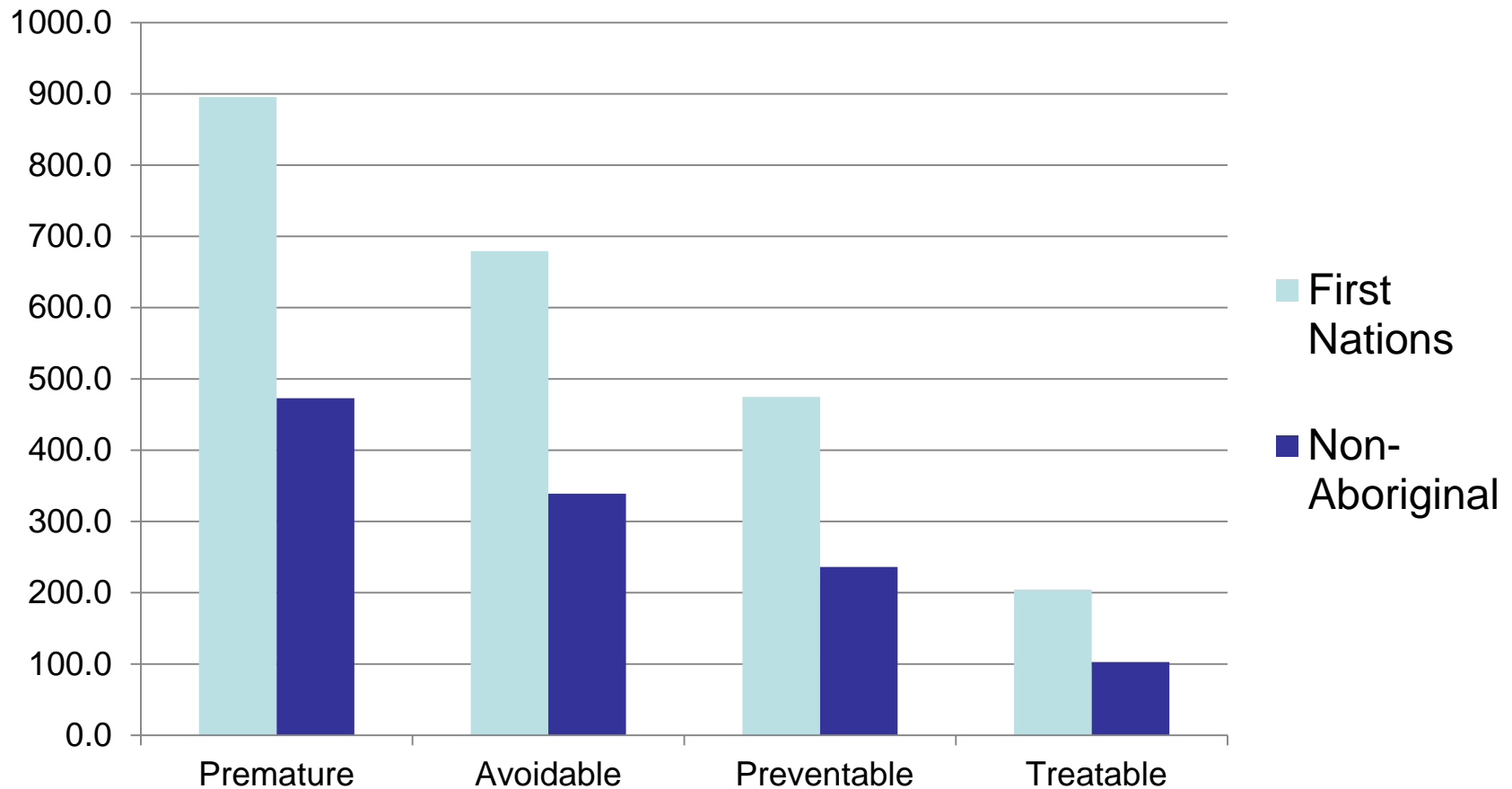


Selected characteristics of study sample, men and women, aged 25 -74 at baseline, Canada, 1991

	First Nations		Non-Aboriginal	
	Male	Female	Male	Female
<i>Educational attainment (%)</i>				
Less than high school grad.	58	55	33	32
High school graduation	33	30	38	36
Post-secondary diploma	7	13	13	19
University degree	2	3	16	13
<i>Income adequacy quintile(%)</i>				
Quintile 1 - lowest	42	45	13	18
Quintile 2	25	24	18	19
Quintile 3	16	15	22	21
Quintile 4	11	10	23	21
Quintile 5 - highest	7	6	24	21

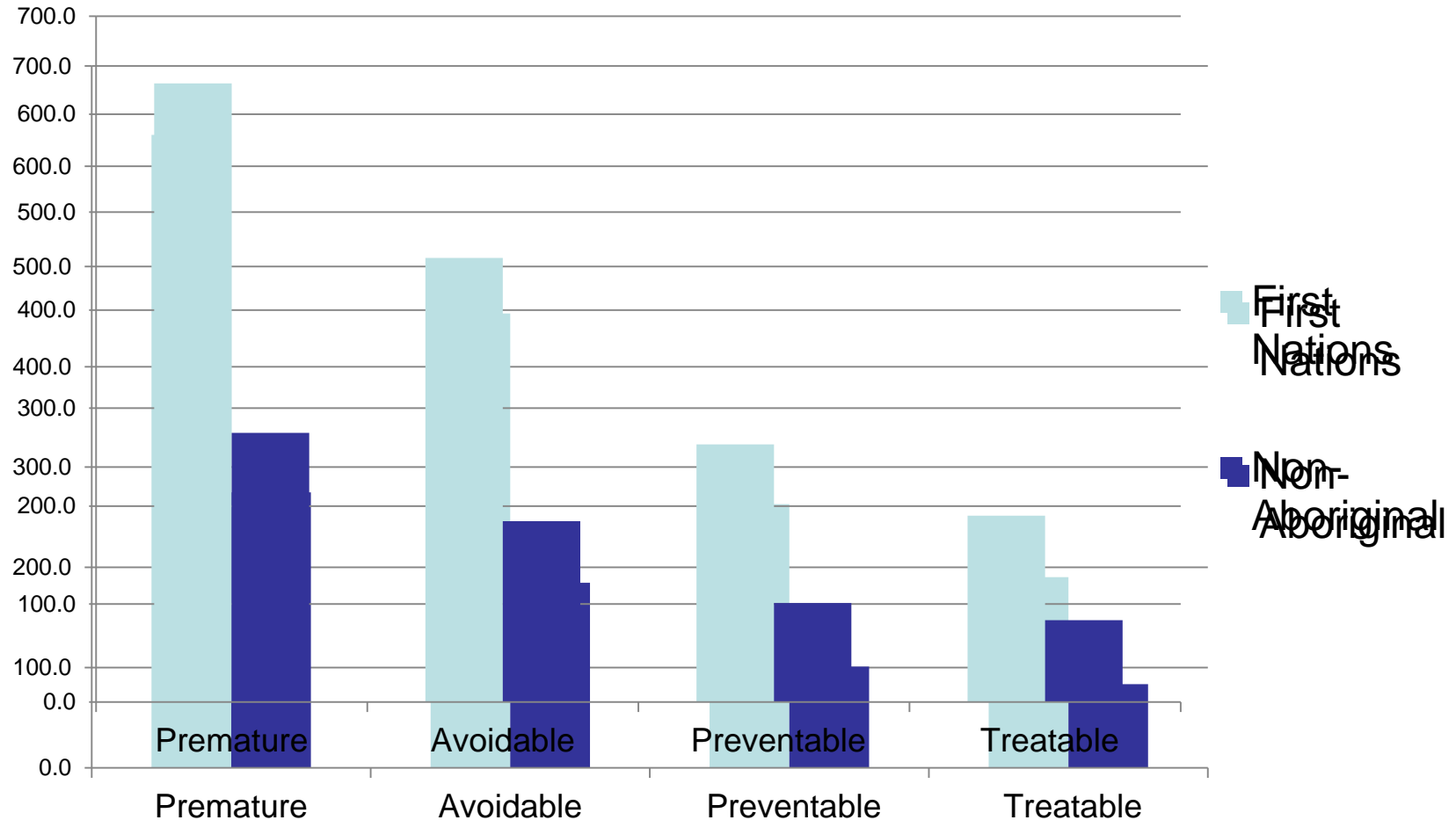


Avoidable mortality by sub-type, ASMR per 100,000 person years at risk, for Men, 1991-2006





Avoidable mortality by sub-type, ASMR per 100,000 person years at risk, for women, 1991-2006





Avoidable mortality by cause of death, comparing First Nations men to non-Aboriginal men Canada, 1991-2006

	RR	95% CI		FN Number of deaths
Alcohol and drug use disorders	5.40	4.62	6.30	186
Unintentional injuries	4.63	4.20	5.10	458
Diabetis mellitis	4.29	3.70	4.99	192
Infections	2.46	2.05	2.94	134
Diseases of the circulatory sys.	1.63	1.51	1.76	87
Suicide and self-inflicted injuries	1.61	1.35	1.92	132

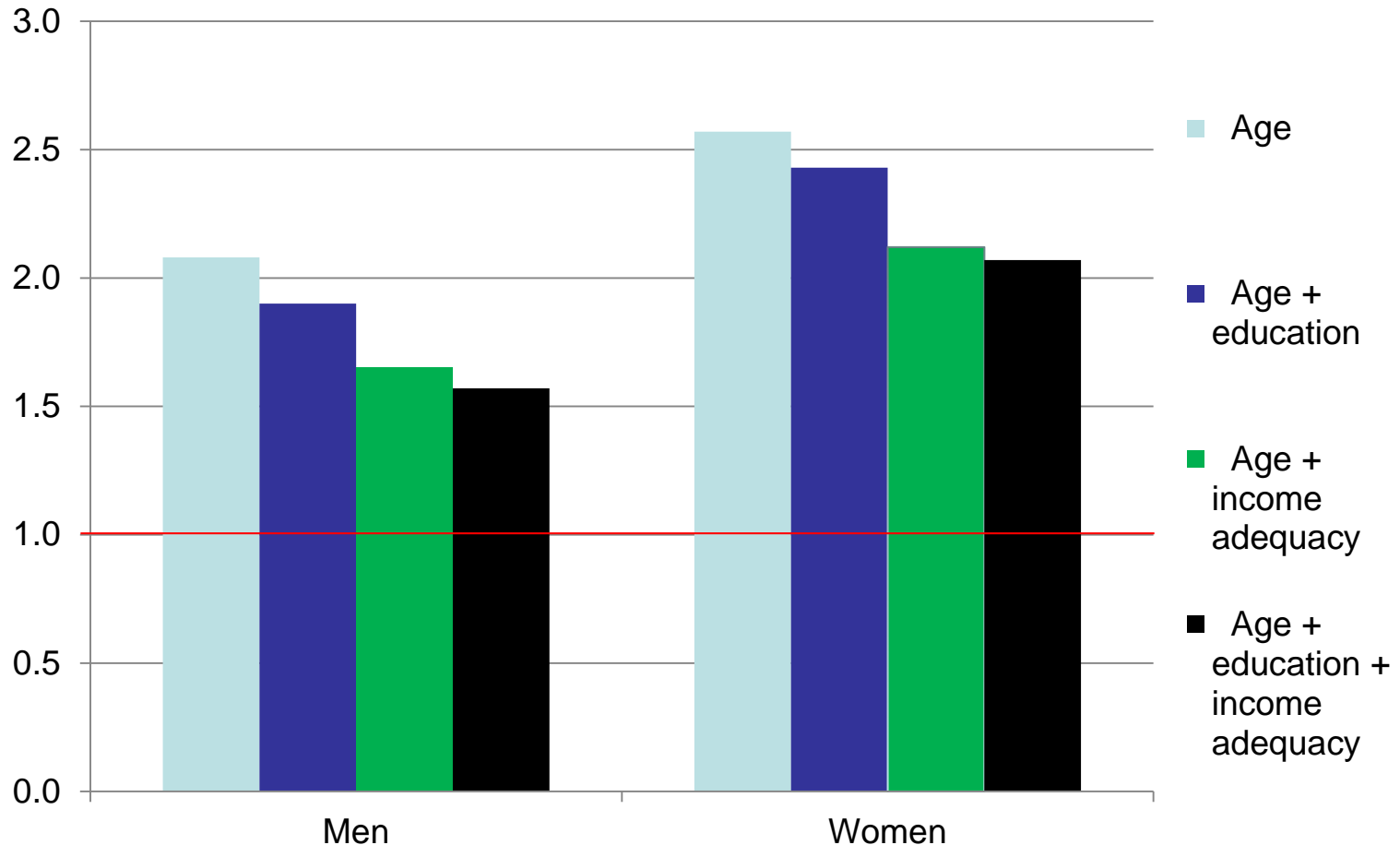


Avoidable mortality by cause of death, comparing First Nations men to non-Aboriginal women Canada, 1991-2006

	RR	95% CI		FN Number of deaths
Alcohol and drug use disorders	9.91	8.24	11.91	146
Diabetes mellitus	7.94	6.88	9.16	226
Infections	6.49	5.46	7.71	156
Unintentional injuries	4.83	4.19	5.57	220
Diseases of the respiratory sys.	2.61	2.14	3.17	111
Diseases of the circulatory sys.	2.33	2.11	2.56	477



Hazard ratios for dying from avoidable causes for First Nations compared to non-Aboriginal cohort members, Canada 1991 to 2006.





Hazard ratios for dying from avoidable causes for First Nations compared to non-Aboriginal cohort members, by age group at baseline, Canada 1991 to 2006.

Age	Men			Women		
	Hazard ratio	95% CI		Hazard ratio	95% CI	
25-34	2.17	1.97	2.38	2.57	2.30	2.86
35-44	1.92	1.76	2.09	2.12	1.93	2.34
45-54	1.54	1.42	1.66	1.87	1.71	2.04
55-64	1.24	1.13	1.34	1.96	1.80	2.14
65-74	1.07	0.93	1.24	1.70	1.45	1.99



LIMITATIONS

- Our data excluded people who were not enumerated by the 1991 census long-form questionnaire.
- First Nations definition based on ancestry and status
- The level of educational attainment and income adequacy were measured only at baseline (4 June 1991) and do not necessarily reflect the situation later in the follow-up period.
- The small sample size of First Nation cohort would not allow detailed analyses of avoidable mortality by detailed causes of death.
- There is no internationally agreed-upon definition of avoidable mortality.



CONCLUSIONS

- Compared with non-Aboriginal cohort members, a higher proportion of premature deaths among First Nations cohort members occurred due to avoidable causes.
- This disparity in mortality is more pronounced among women and younger age groups, and for such causes as unintentional injuries; alcohol and drug use disorders; and diabetes mellitus.
- Income and explain an important portion of differences in avoidable mortality between First Nations and non-Aboriginal populations in the study.



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